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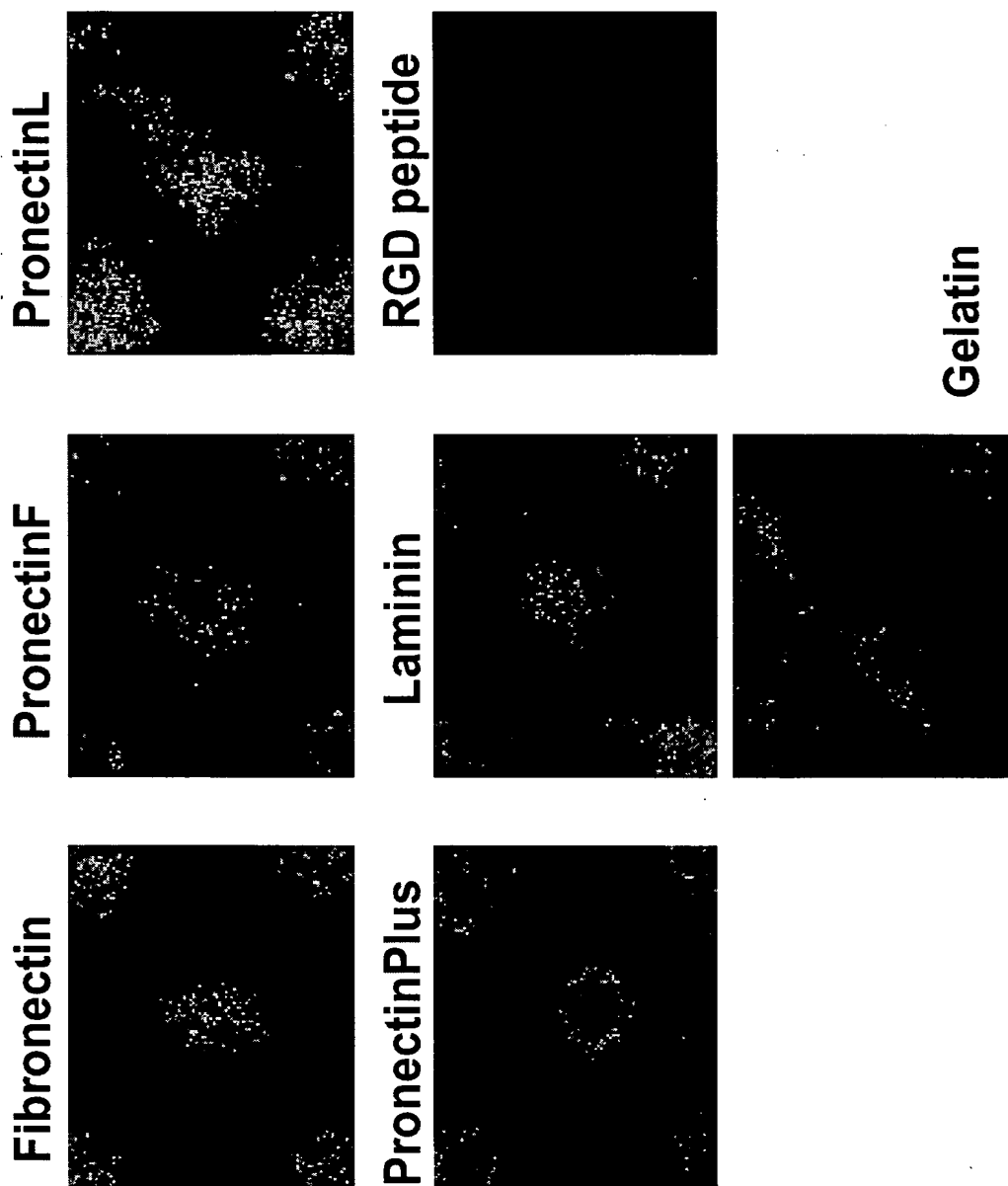
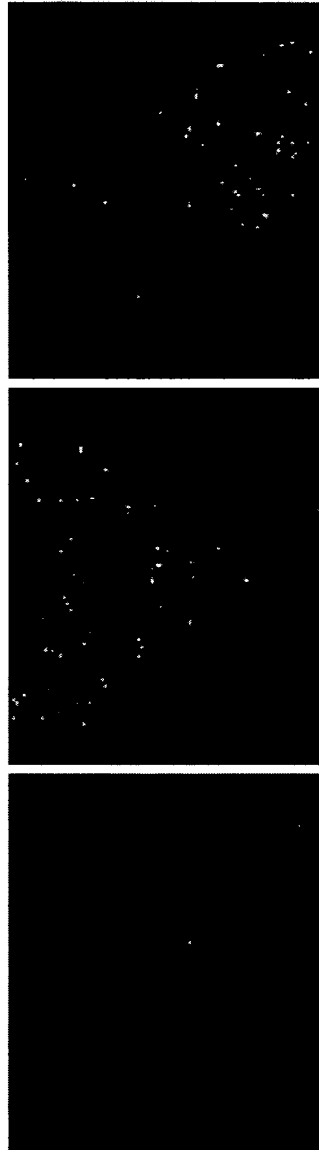


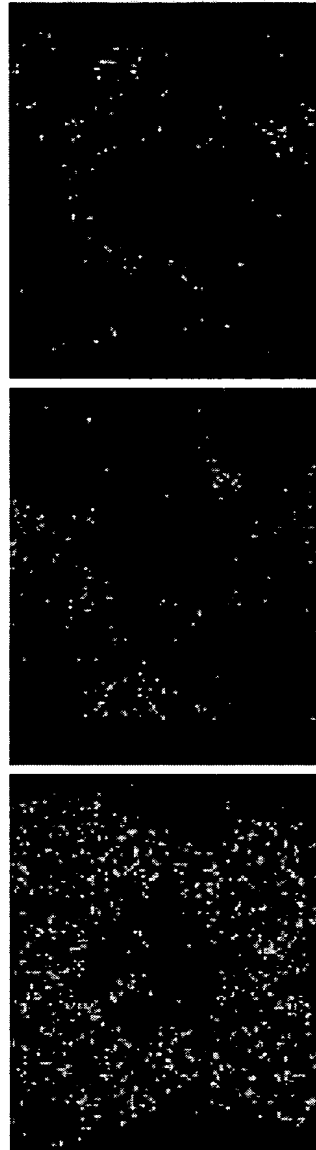
FIG.1

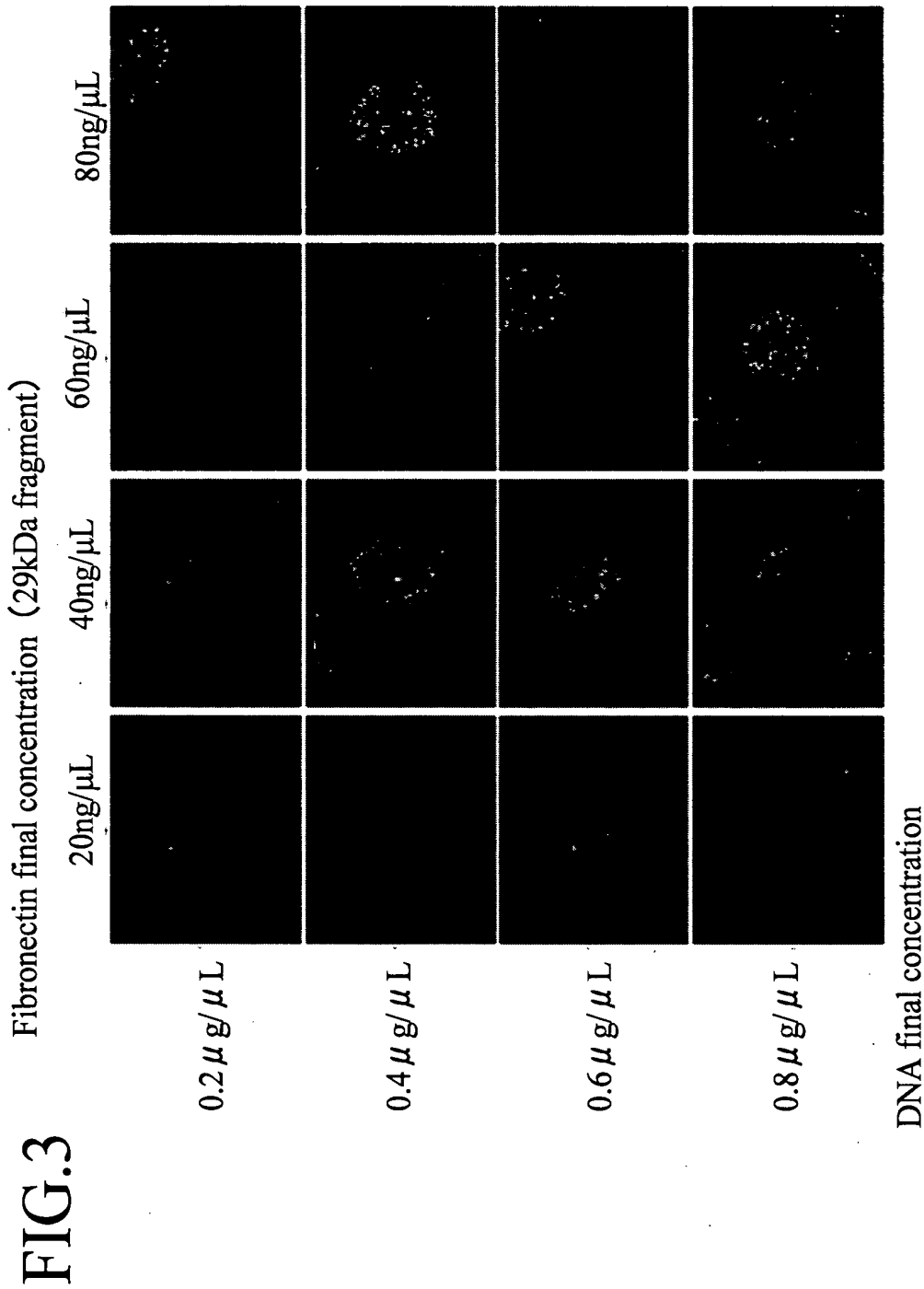
FIG.2

Fibronectin (43kDa fragment)



Fibronectin (72kDa fragment)

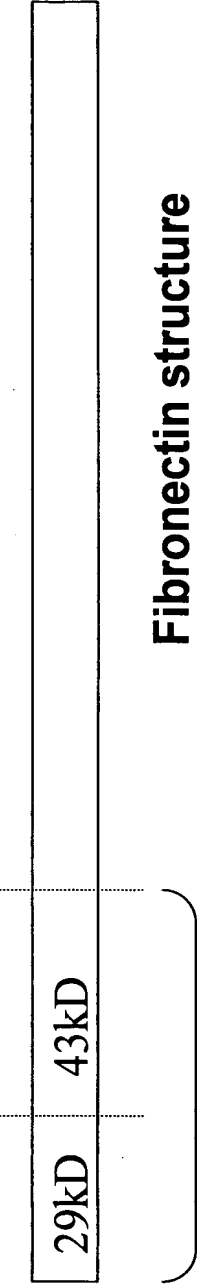




C-term

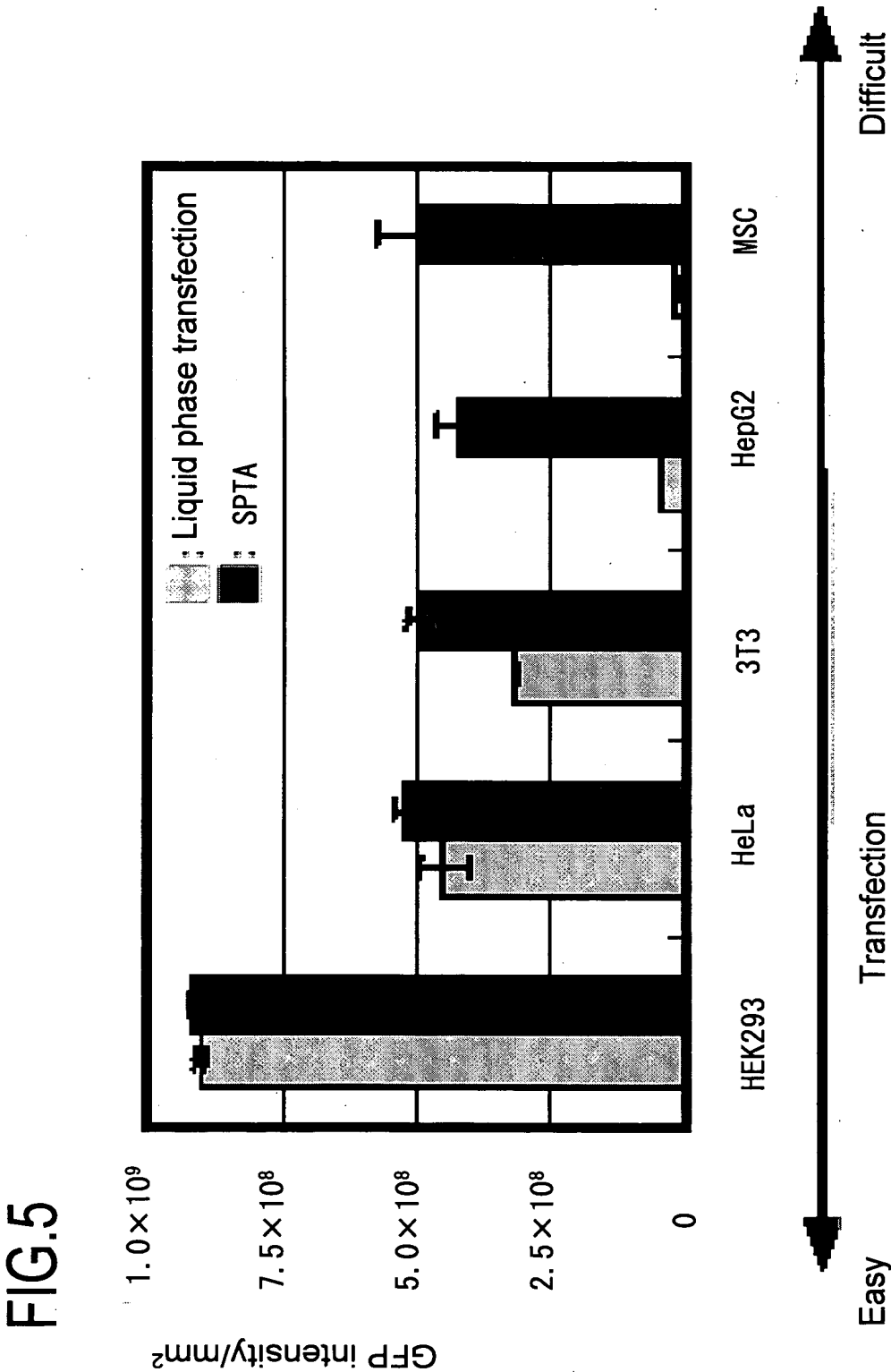
N-term

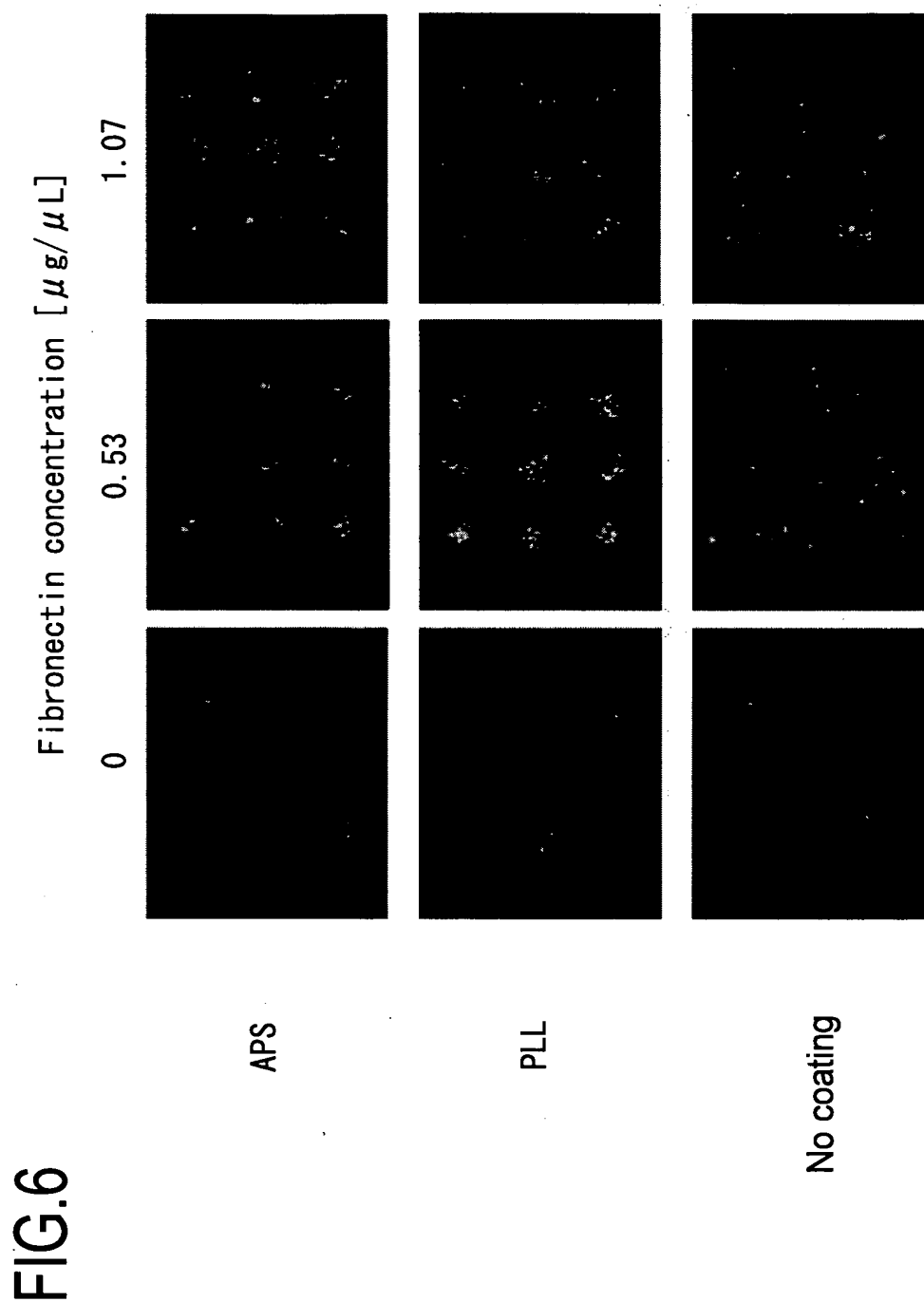
FIG.4



Fragments	Binding molecules
29 kD	Actin, Heparin, Fibrin, etc.
43 kD	Collagen (Gelatin)

	29 kD	43 kD	72 kD
TF efficiency	◎	○	◎
Cross-contamination	none	some	some





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Fig. 7

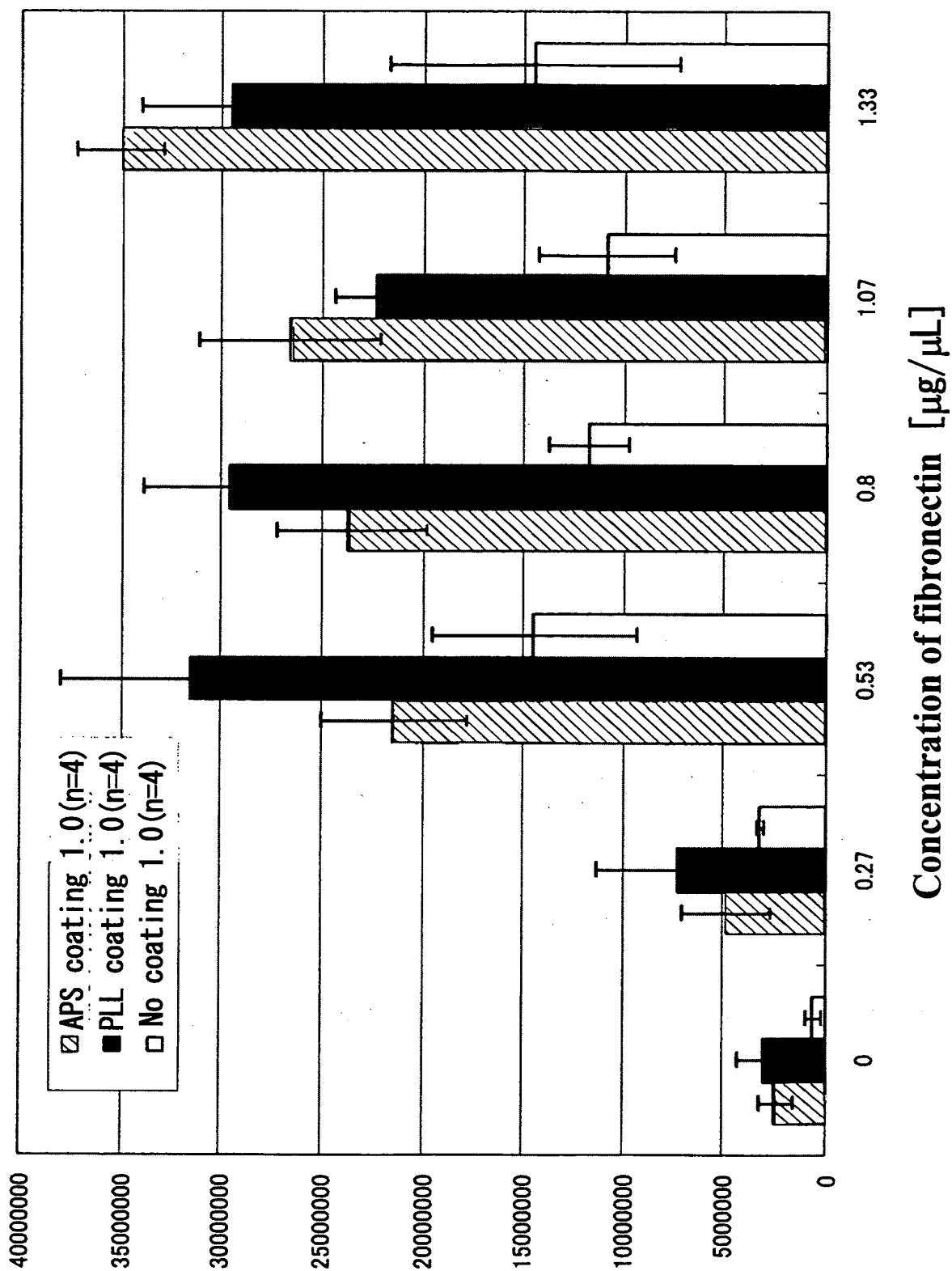
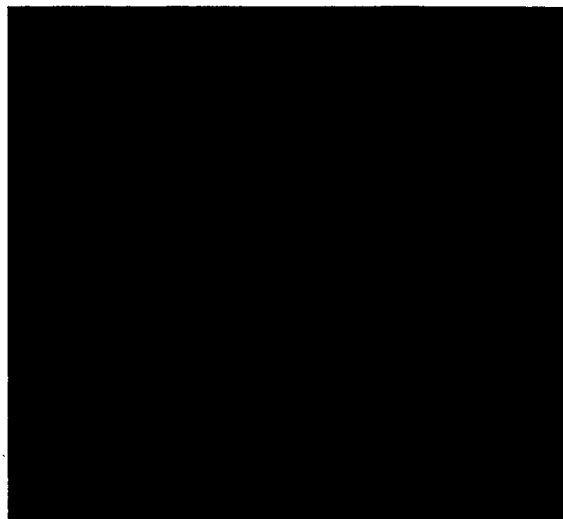


FIG.8



Fibronectin(+)



Fibronectin(-)

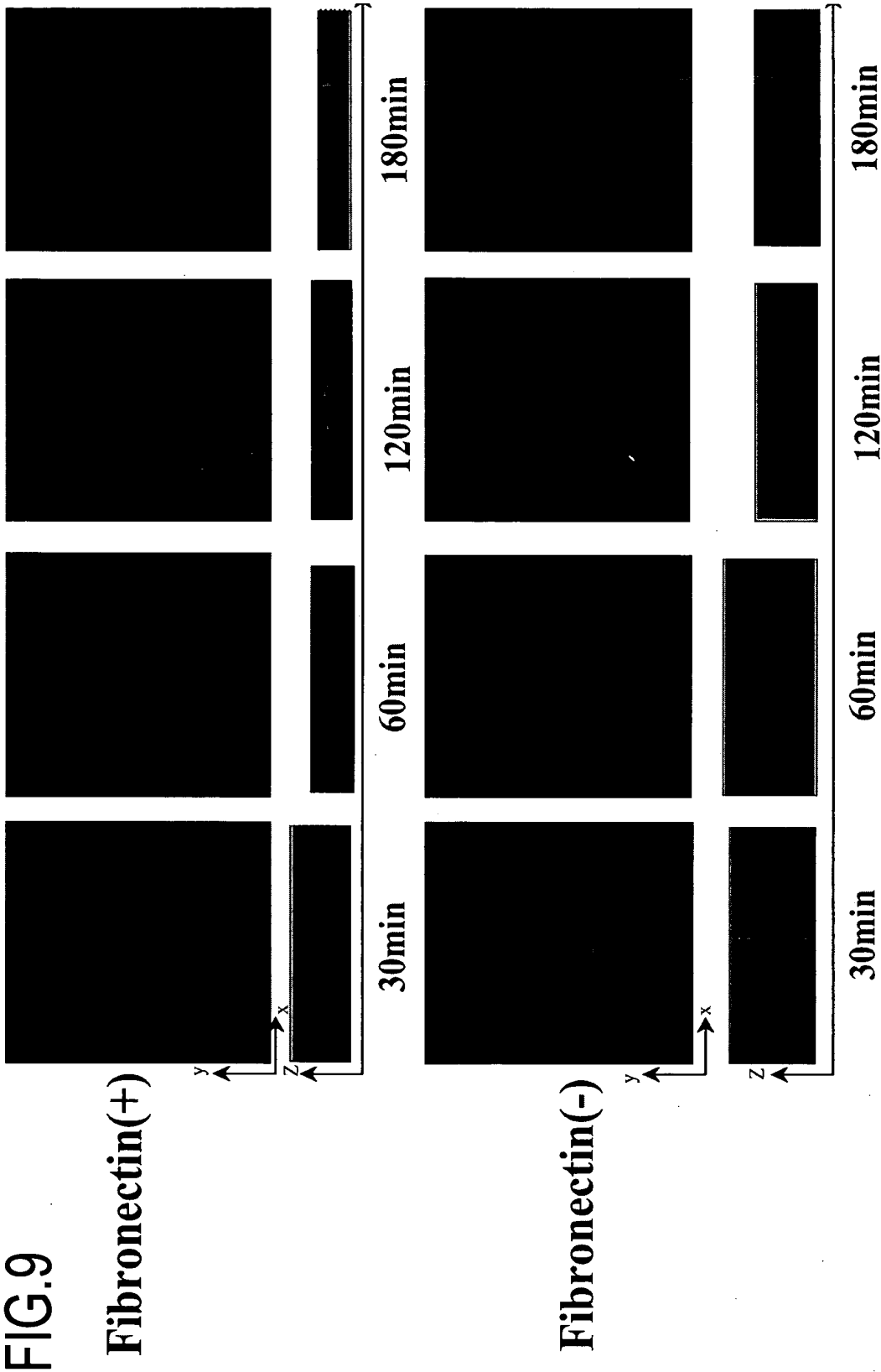


FIG.10

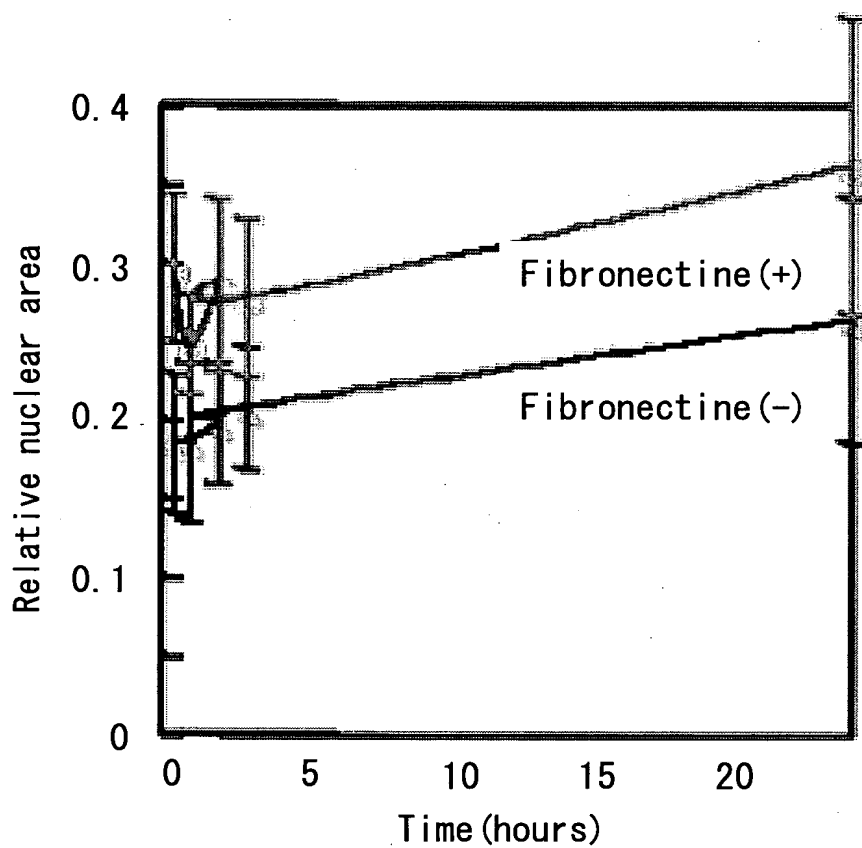
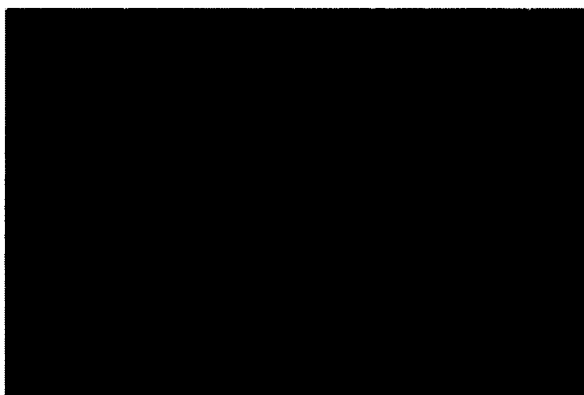


FIG.11



FIG.12



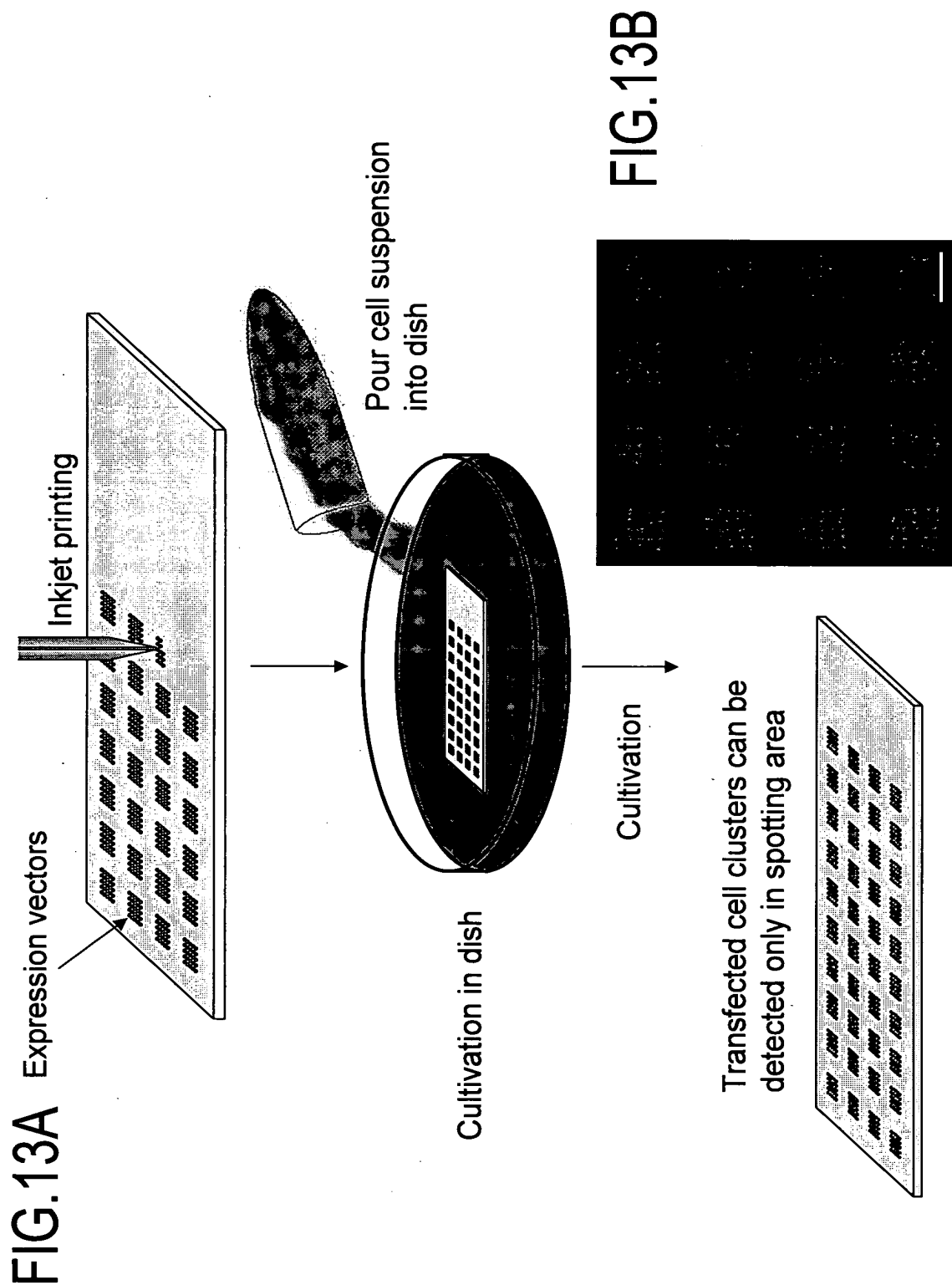
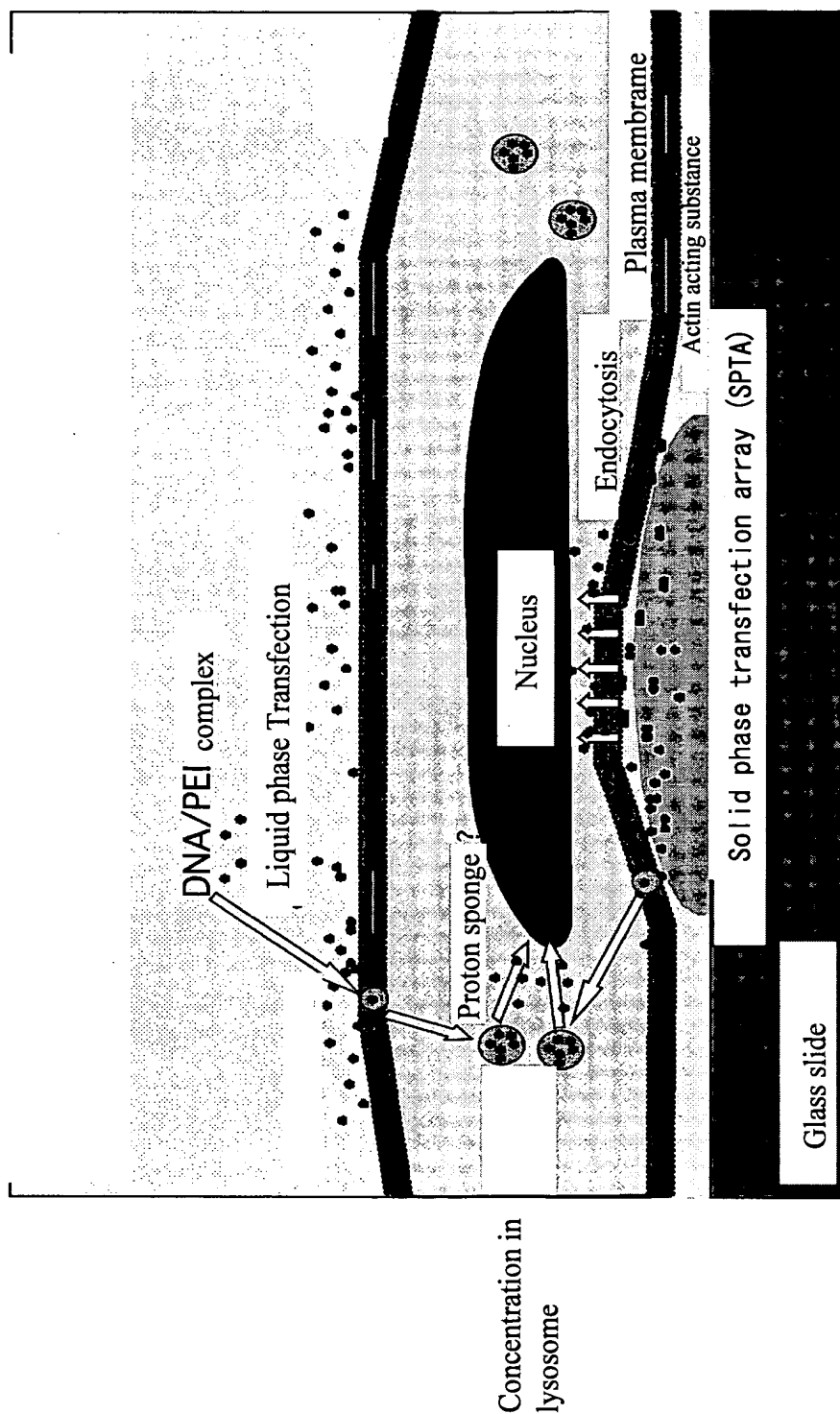
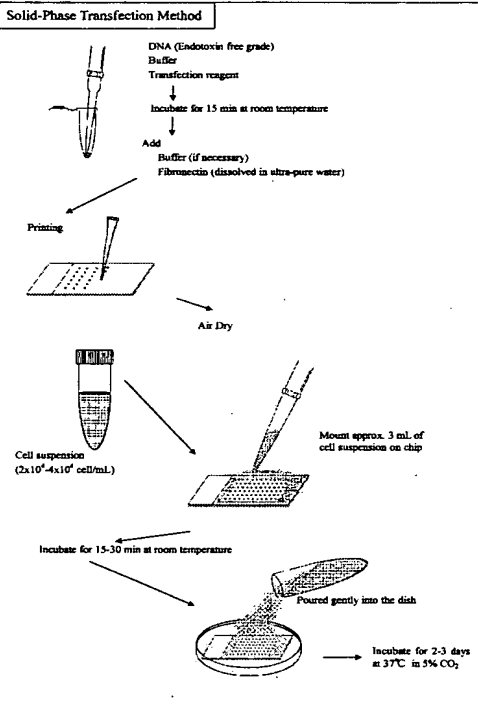
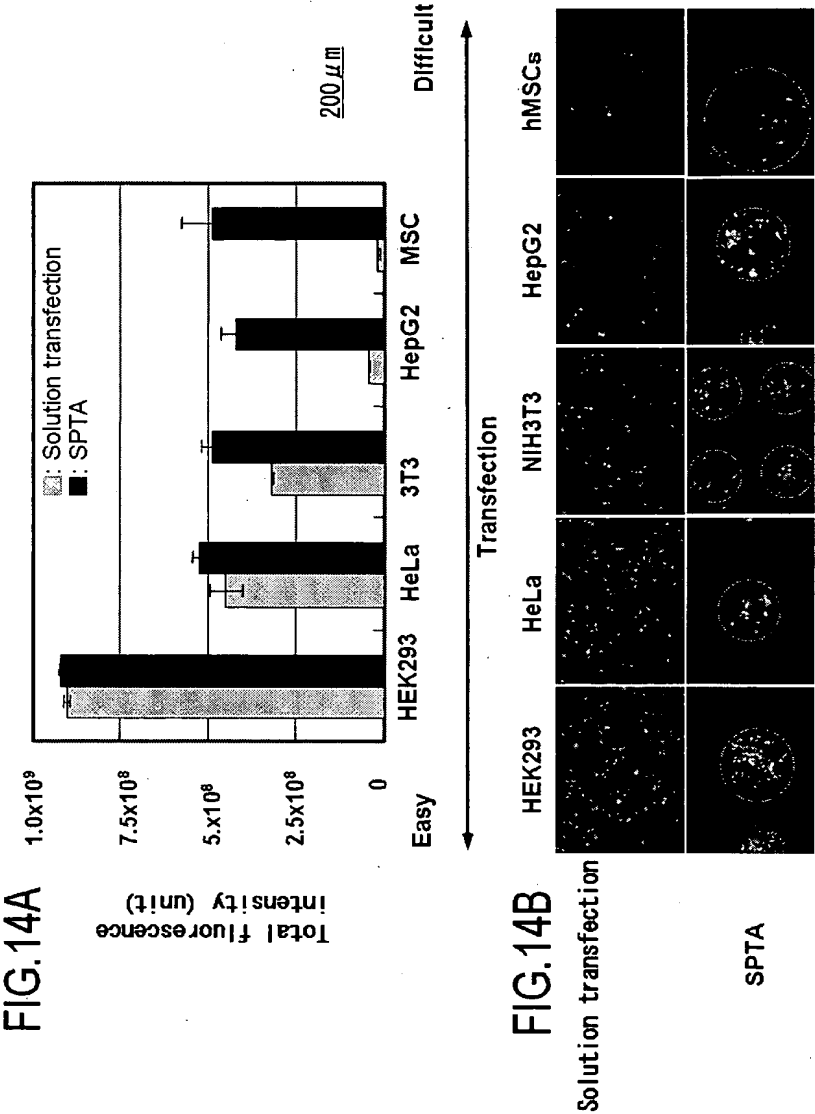


FIG.13C





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FIG.14D

For HEK293

DMEM (serum free)	9.5	uL
Plasmid DNA (1mg/mL)	1.5	uL
TransFast (1mg/mL)	9.0	uL
DMEM (serum free)	5.0	uL
Fibronectin (4mg/mL)	5.0	uL
Final volume	30.0	uL

Scheme for HEK293

1.5mL micro-tube
↓ ←DMEM
↓ ←Plasmid DNA
mix Incubate for 2-3 days
↓ ←TransFast at 37°C in 5% CO₂
mix completely and incubate for 15 min at RT
↓ ←DMEM
↓ ←Fibronectin
mix completely
↓
ready to print

For HeLa, NIH3T3-3, HepG2

DMEM (serum free)	14.5	uL
Plasmid DNA (1mg/mL)	1.5	uL
Lipofectamine2000	4.5	uL
DMEM (serum free)	5.0	uL
Fibronectin (4mg/mL)	5.0	uL
Final volume	30.0	uL

Scheme for HeLa, NIH3T3-3, and HepG2

1.5mL micro-tube
↓ ←DMEM
↓ ←Plasmid DNA
mix
↓ ←Lipofectamine2000
mix completely and incubate for 15 min at RT
↓ ←DMEM
↓ ←Fibronectin
mix completely
↓
ready to print

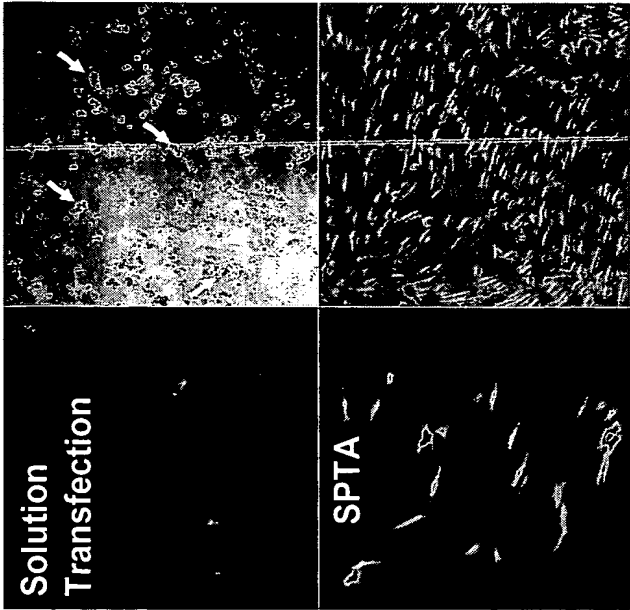
For hMSCs

	N/P=5	N/P=10	N/P=20	
DMEM (serum free)	12.75	12.0	10.5	uL
Plasmid DNA (1mg/mL)	1.5	1.5	1.5	uL
JetPEI (x4) conc.	0.75	1.5	3.0	uL
Fibronectin (4mg/mL)	5.0	5.0	5.0	uL
Final volume	20.0	20.0	20.0	uL

Scheme for hMSCs

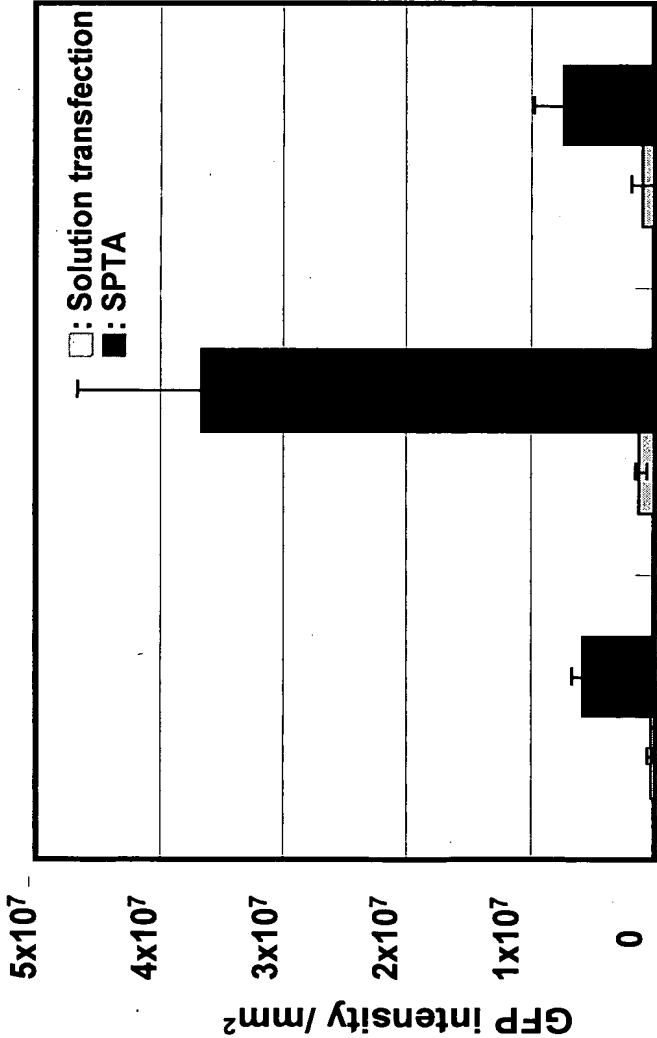
1.5mL micro-tube
↓ ←DMEM
↓ ←Plasmid DNA
mix
↓ ←jetPEI
mix completely and incubate for 15 min at RT
↓ ←Fibronectin
mix completely
↓
ready to print

FIG.15B



N/P=10

FIG.15A



N/P=20

N/P=10

N/P=5

FIG.16B



FIG.16A

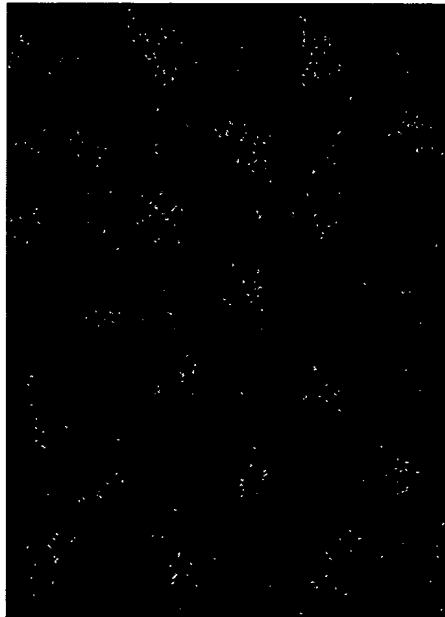


FIG.16C

Number of adherent cells						
	Time(min)					
	0	5	10	15	20	30
APS	235	220	202	157	170	162
APS+gelatin	212	206	184	145	156	183
APS+fibronectin	229	198	183	132	100	85
APS+pronectin L	257	170	126	94	71	47
PLL	231	221	205	162	168	159
PLL+gelatin	218	208	186	151	146	156
PLL+fibronectin	225	174	162	129	98	79
PLL+pronectin L	214	151	132	90	76	50
MAS	231	222	216	182	176	169
MAS+gelatin	224	198	182	163	159	162
MAS+fibronectin	218	182	169	143	112	86
MAS+pronectin L	220	176	152	124	101	66
No coating	226	216	208	192	183	164
Cell adhesion rate (proportion of adherent cells (%))						
	Time(min)					
	0	5	10	15	20	30
APS	0	6.382979	14.04255	33.19149	27.65957	31.06383
APS+gelatin	0	2.830189	13.20755	31.60377	26.41509	13.67925
APS+fibronectin	0	13.53712	20.08734	42.35808	56.33188	62.8821
APS+pronectin L	0	33.85214	50.97276	63.42412	72.37354	81.71206
PLL	0	4.329004	11.25541	29.87013	27.27273	31.16883
PLL+gelatin	0	4.587156	14.6789	30.73394	33.02752	28.44037
PLL+fibronectin	0	22.66667	28	42.66667	56.44444	64.88889
PLL+pronectin L	0	29.43925	38.31776	57.94393	64.48598	76.63551
MAS	0	3.896104	6.493506	21.21212	23.80952	26.83983
MAS+gelatin	0	11.60714	18.75	27.23214	29.01786	27.67857
MAS+fibronectin	0	16.51376	22.47706	34.40367	48.62385	60.55046
MAS+pronectin L	0	20	30.90909	43.63636	54.09091	70
No coating	0	4.424779	7.964602	15.04425	19.02655	27.43363

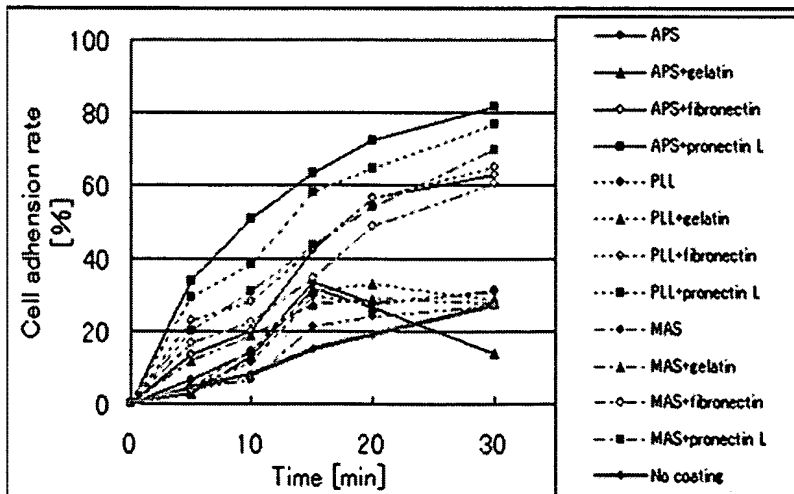


FIG.16D

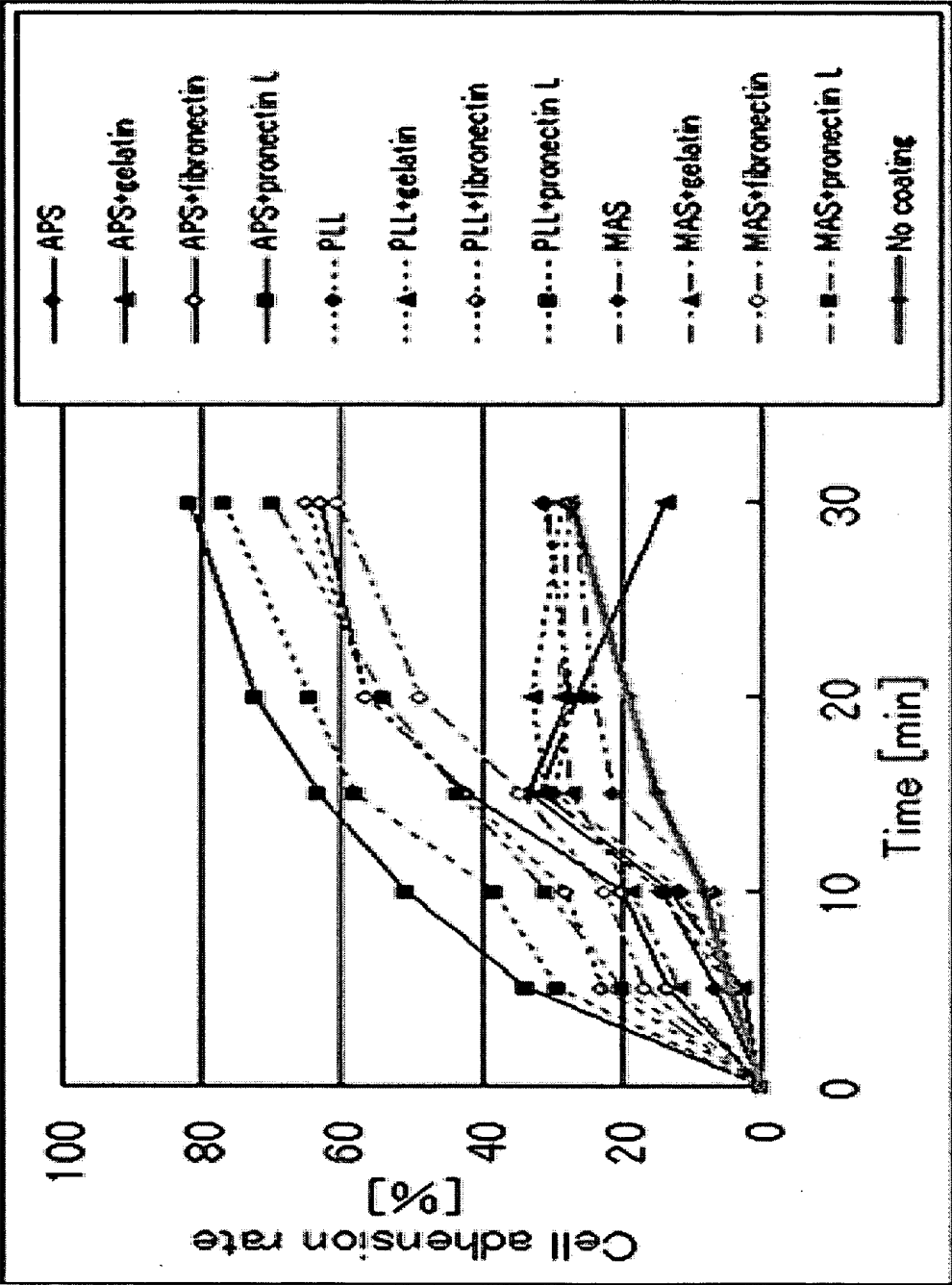


FIG.17

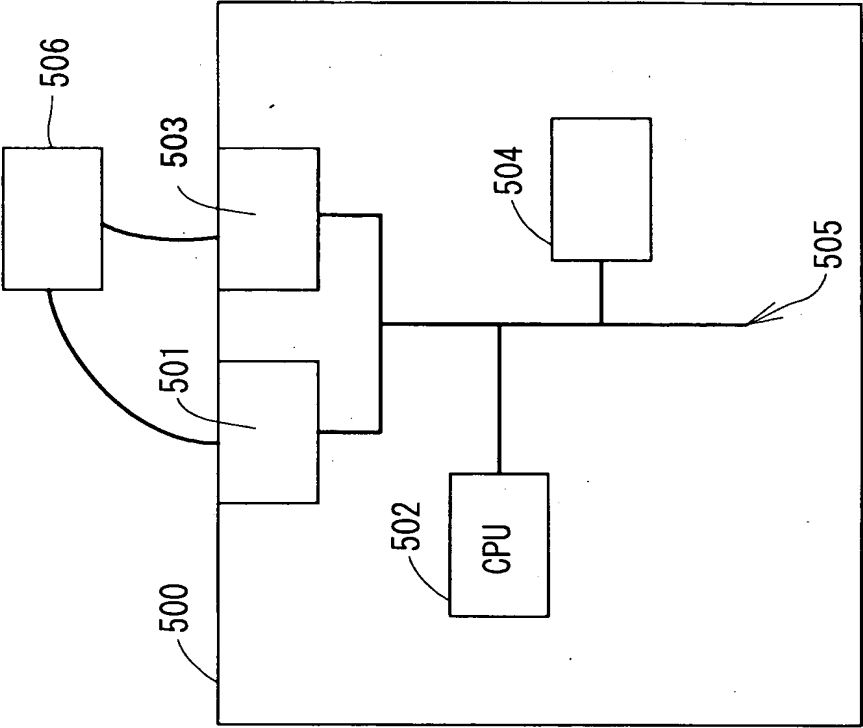
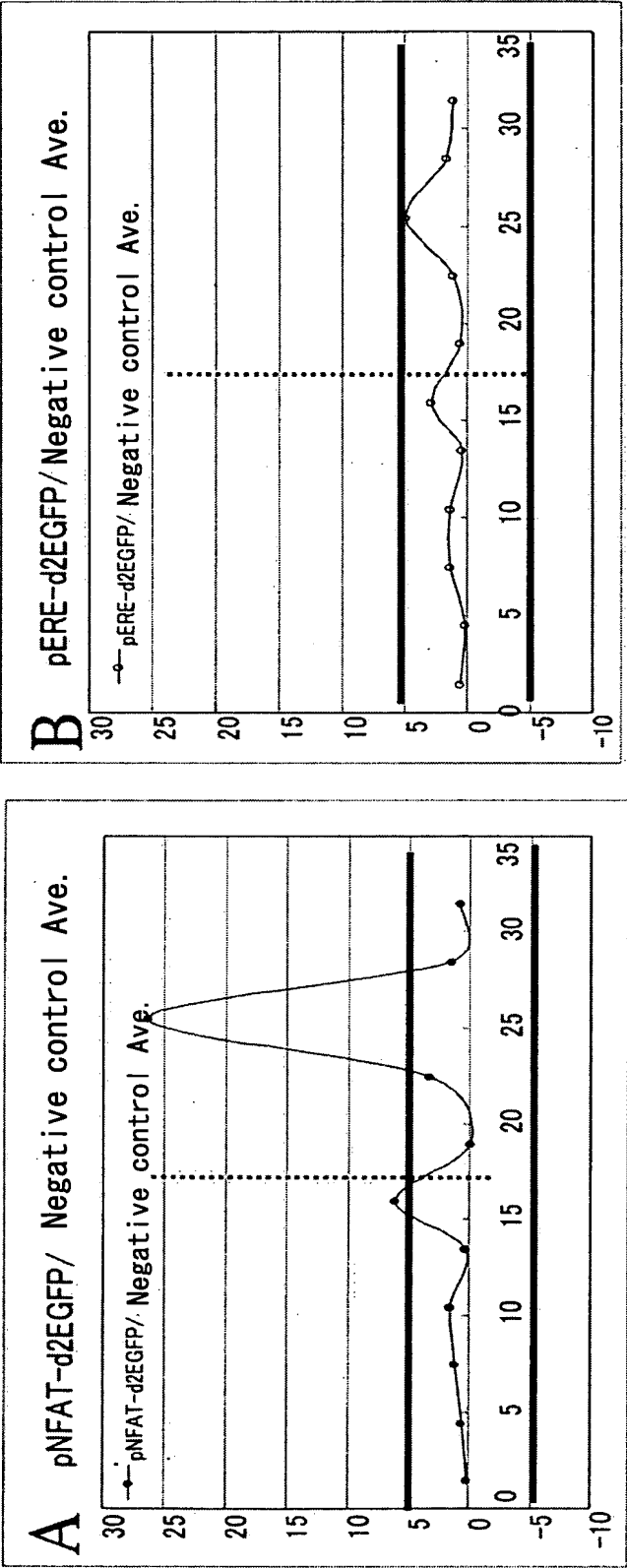
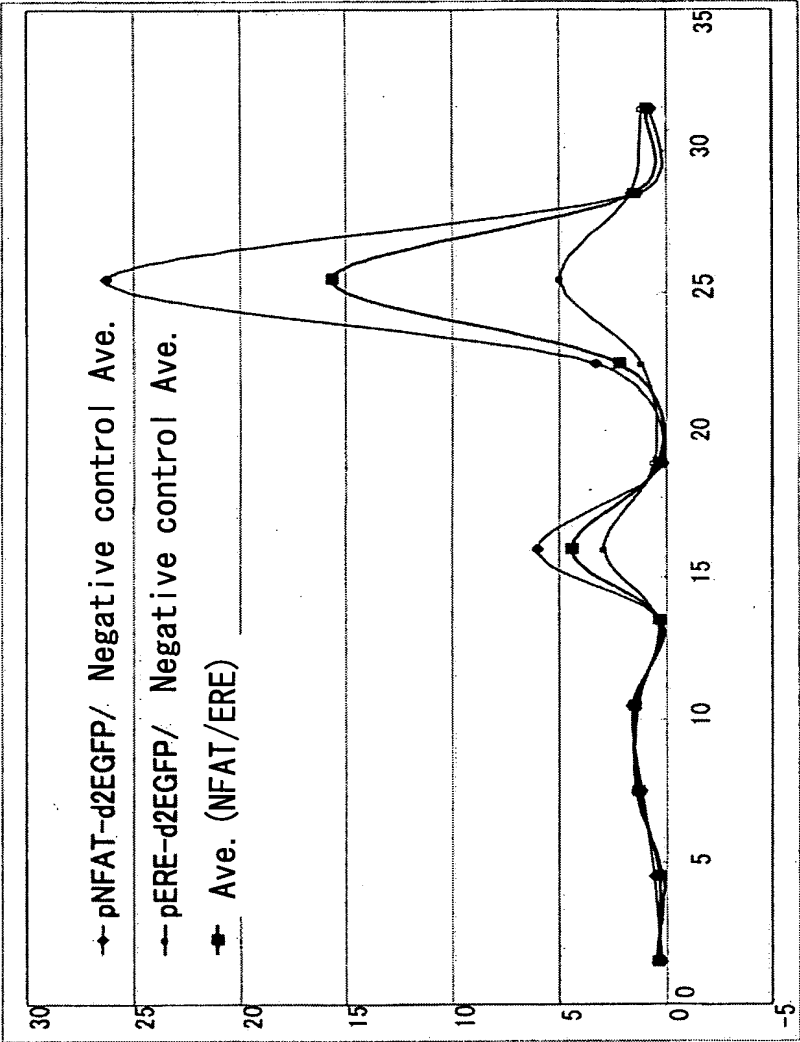


FIG.18A

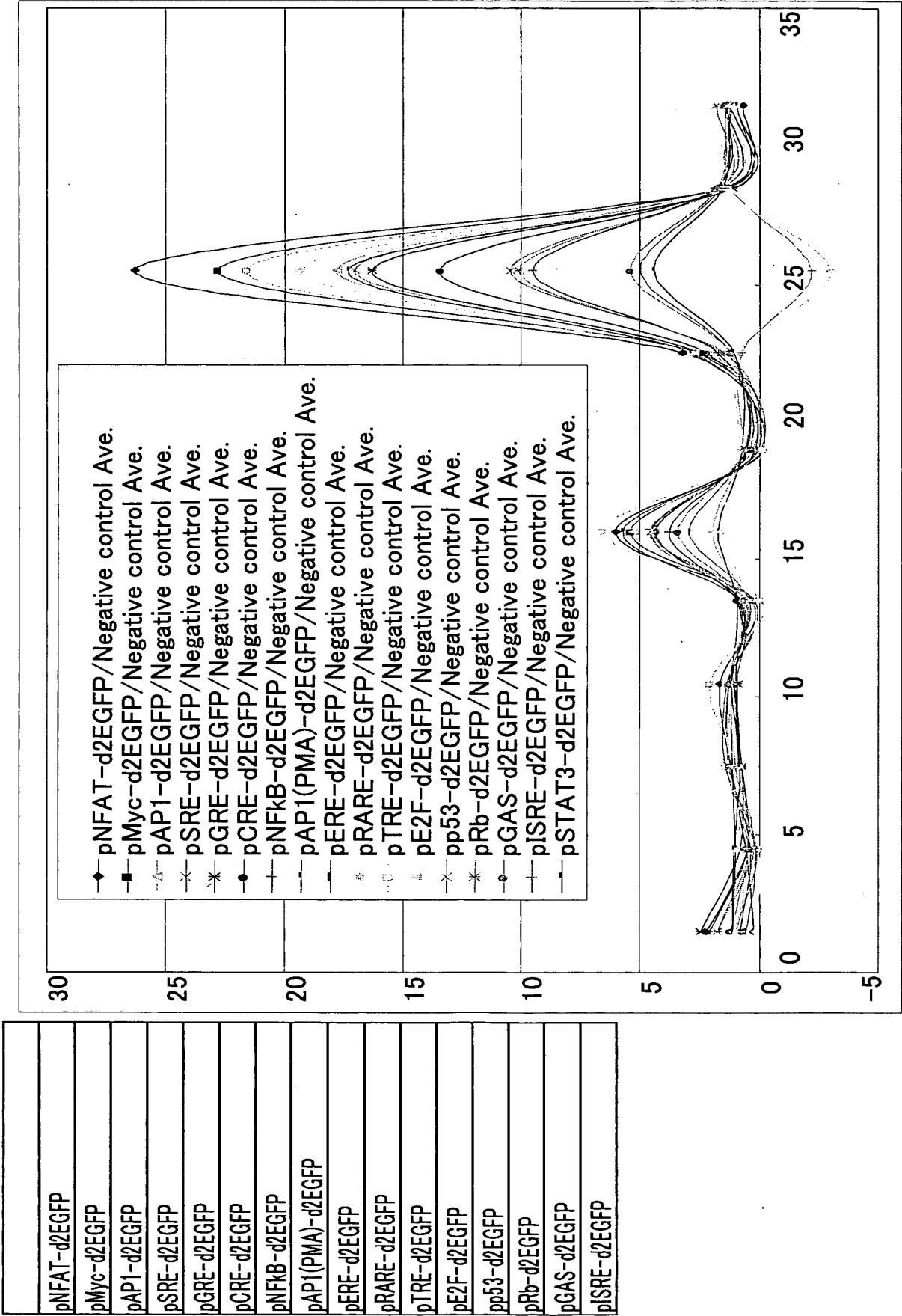


	0-31.5 hr	17.5-31.5 hr	0-17.5 hr
A	+	+	+
B	+	+	-



	0-31.5 hr	17.5-31.5 hr	0-17.5 hr
NFAT	+	+	+
ERE	+	-	-
NFAT/ERE	+	+	-

FIG.19



TH=5	Day0-1				
	Induction of differentiation		0-31.5	0-17.5	17.5-31.5
	Extraction number=1		82.35294	29.41176	82.35294
	Extraction number=2		70.58824	41.17647	88.23529
	Extraction number=3		88.23529	29.41176	94.11765
	Extraction number=5		94.11765	11.76471	94.11765
	Extraction number=8		100	5.882353	100
	Extraction number=16		100	0	100
	Extraction number=17		100	0	100

FIG.20

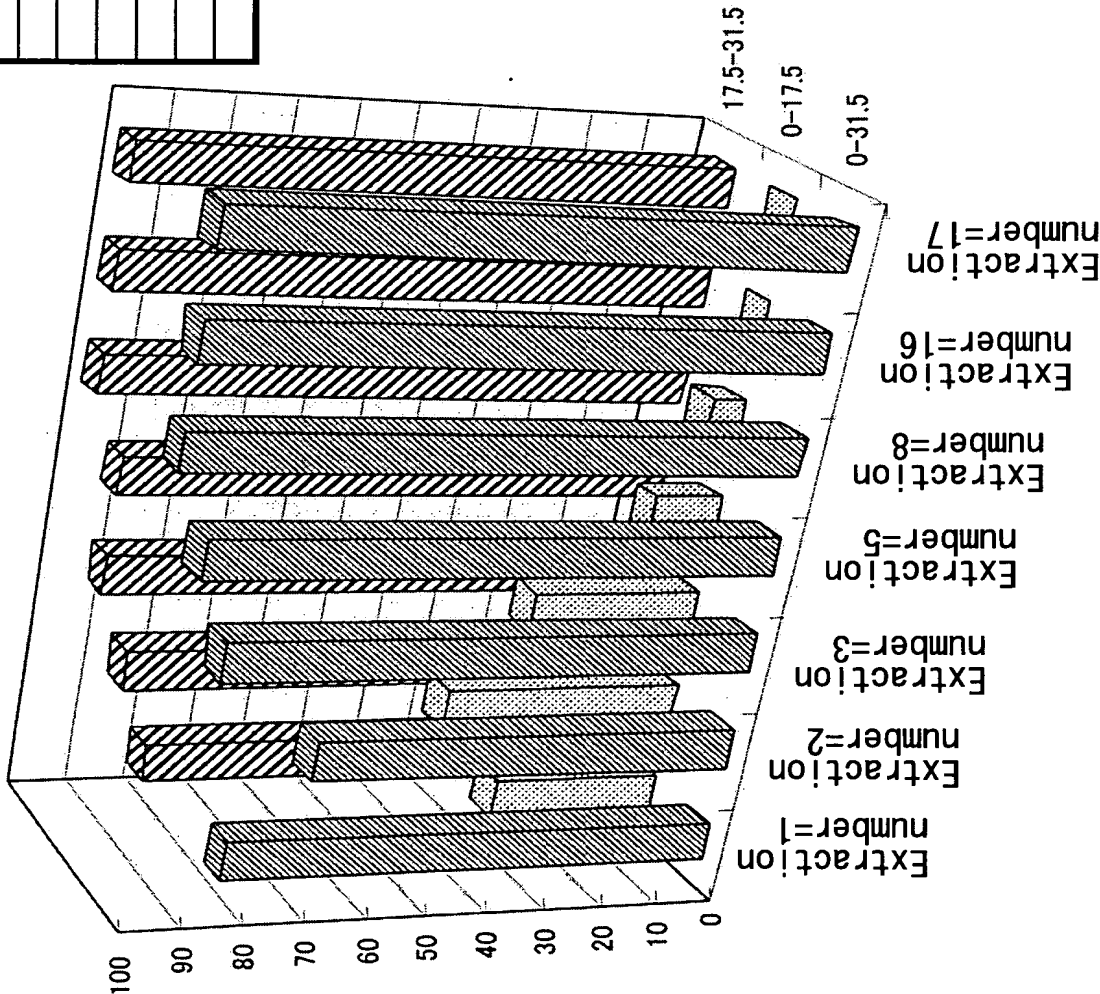
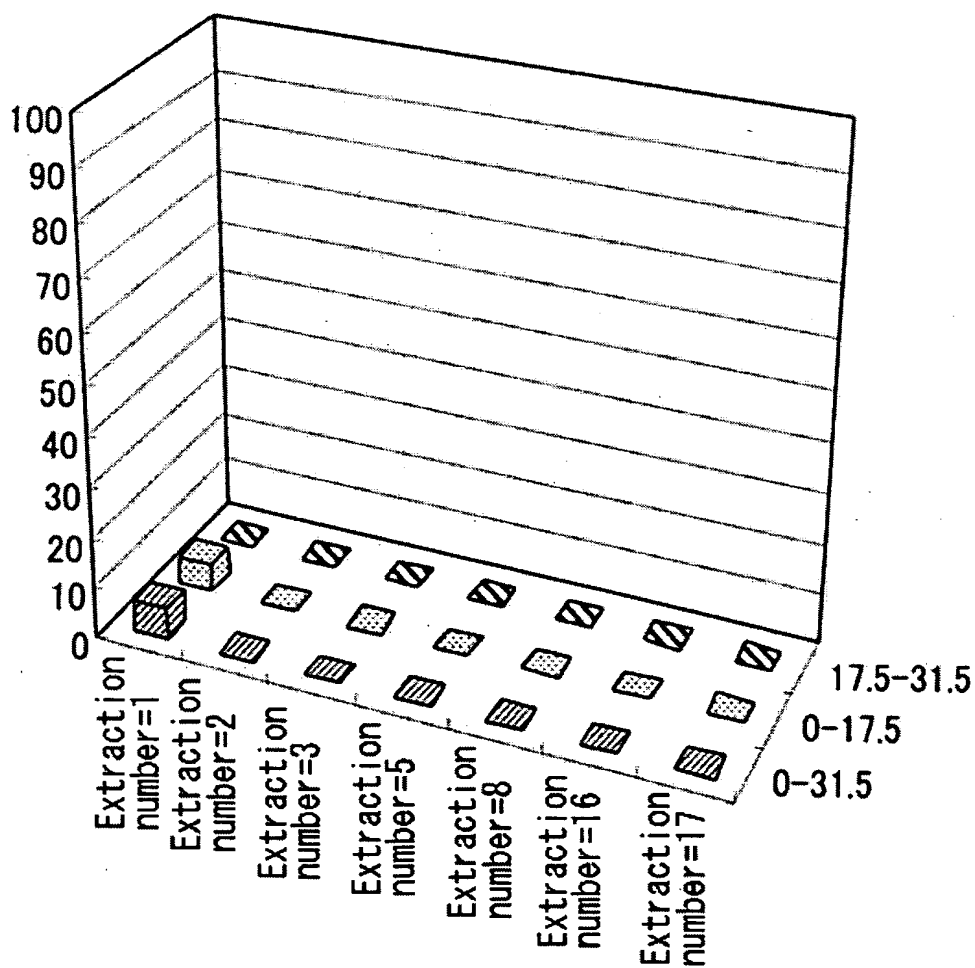


FIG.21

No induction of differentiation	0-31.5	0-17.5	17.5-31.5
Extraction number=1	5.882353	5.882353	0
Extraction number=2	0	0	0
Extraction number=3	0	0	0
Extraction number=5	0	0	0
Extraction number=8	0	0	0
Extraction number=16	0	0	0
Extraction number=17	0	0	0



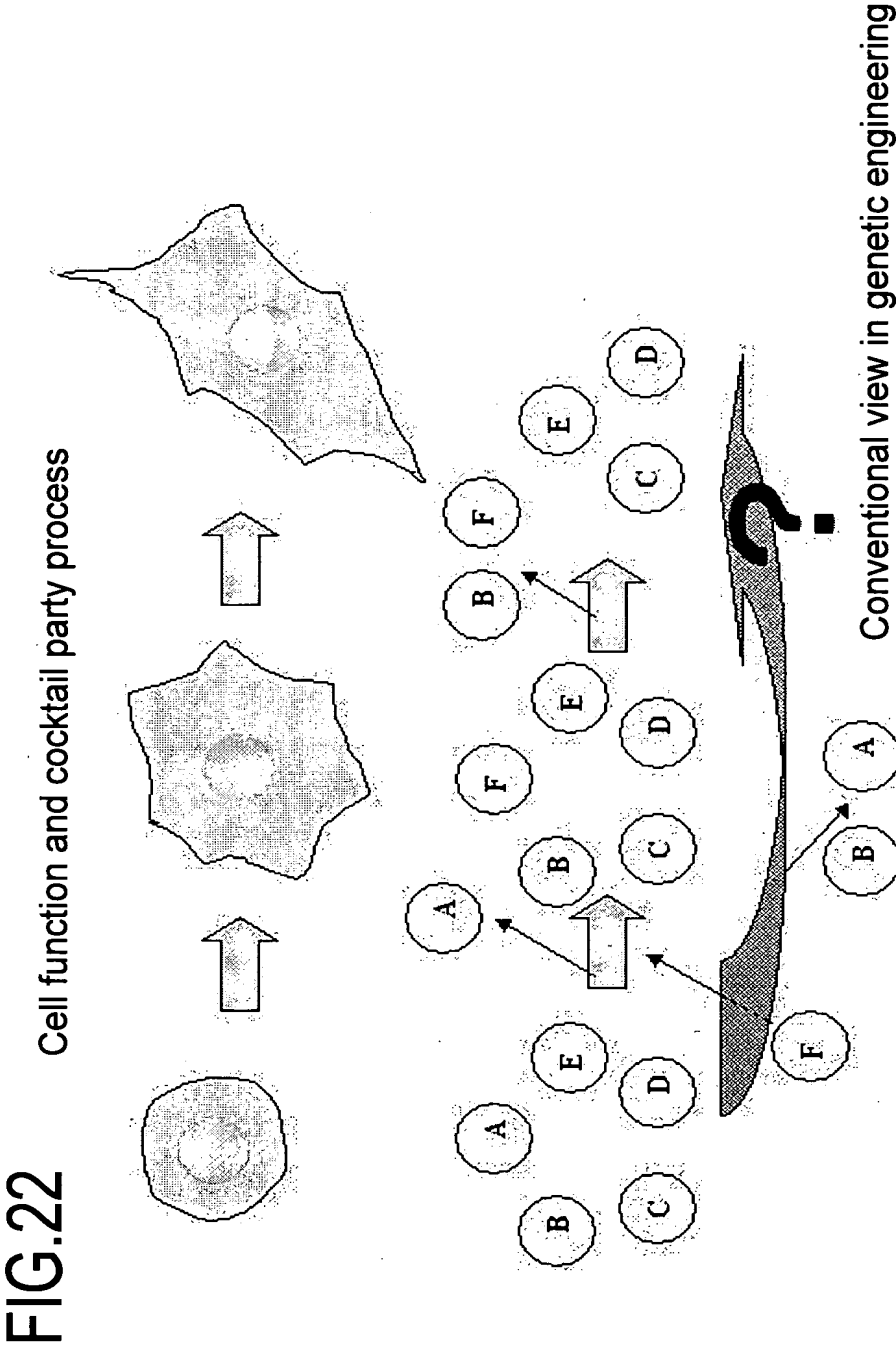
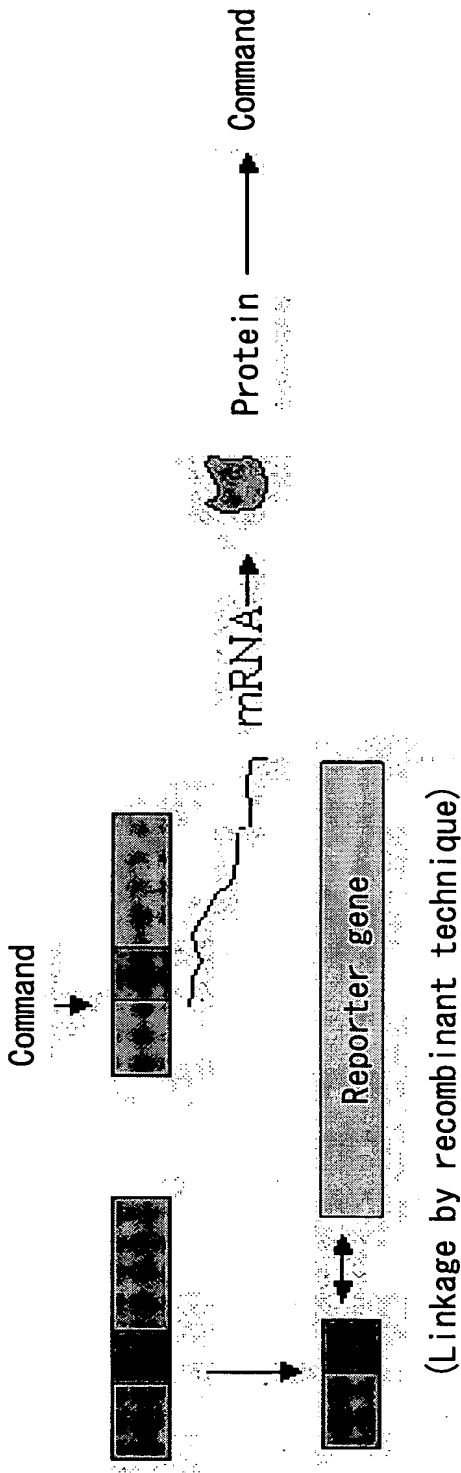
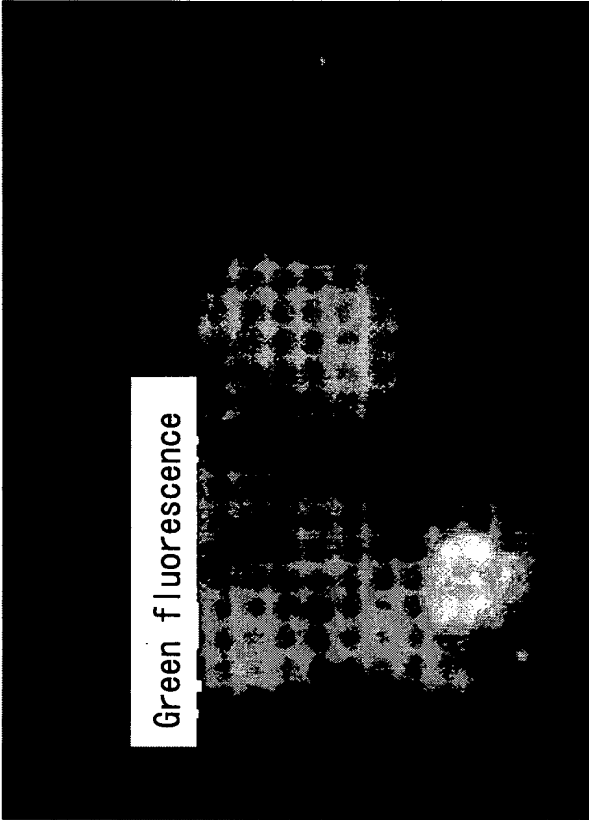
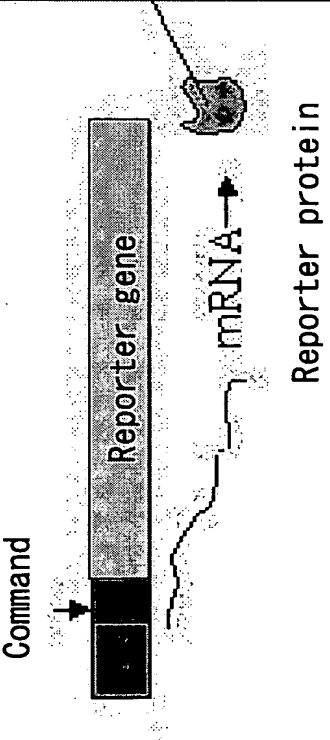


FIG.23

Reporter for gene transcription switching



(Linkage by recombinant technique)



Construction of transcription factor reporter

Vector	Pathway	Transcription factor	Cis-acting enhancer element
pNFKB-d2FGFP	IKK/NFKB	NFKB	kB
pAP1-d2FGFP	SAPK/JNK	c-Jun, c-Fos	AP1
pSRF-d2FGFP	MAPK/JNK, MAPK/FRK	Flk-1, STAT, TCF, SRF	SRF
pGRF-d2FGFP	Glicocorticoide (HXP90 mediation)	GR	GRF
pCRF-d2FGFP	PKA/CRFB, JNK/p38 PKA	ATF2/CRFB	CRF
pMpc-TA-d2FGFP, pMYC-d2FGFP	Cell cycle	c-myc	F-box
pHSF-d2FGFP	HSF	HSF	HSF
pNFAT-d2FGFP	NFAT/Calcineurin/PKC	NFAT	NFAT
pAP1(PMA)-TA-d2FGFP	PKC		AP1(PMA)
pRb-TA-d2FGFP	Cell cycle		Rb
pF2F-TA-d2FGFP	Cell cycle		F2F
pp53-TA-d2FGFP	Cell cycle apoptosis		P53
pGAN-TA-d2FGFP	JAK/STAT	STAT1/STAT1	GAS
pISRF-TA-d2FGFP	JAK/STAT	STAT2/STAT1	ISRF
pSTAT3-TA-d2FGFP	JAK/STAT	STAT3/STAT3	STAT3
pFRF-TA-d2FGFP	Estrogen receptor		FRF
pRARF-TA-d2FGFP	Retinoic acid		RARF
pTRF-TA-d2FGFP	Thyroid receptor		TRF

FIG.24

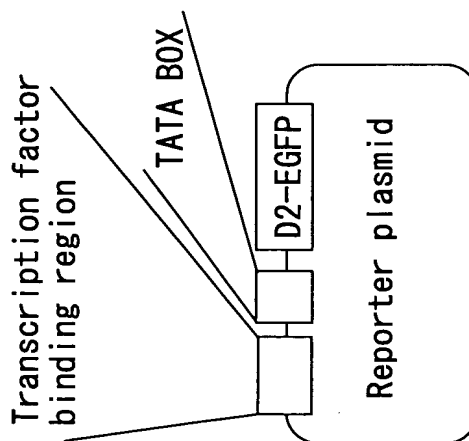


FIG.25
Transcription factor reporter

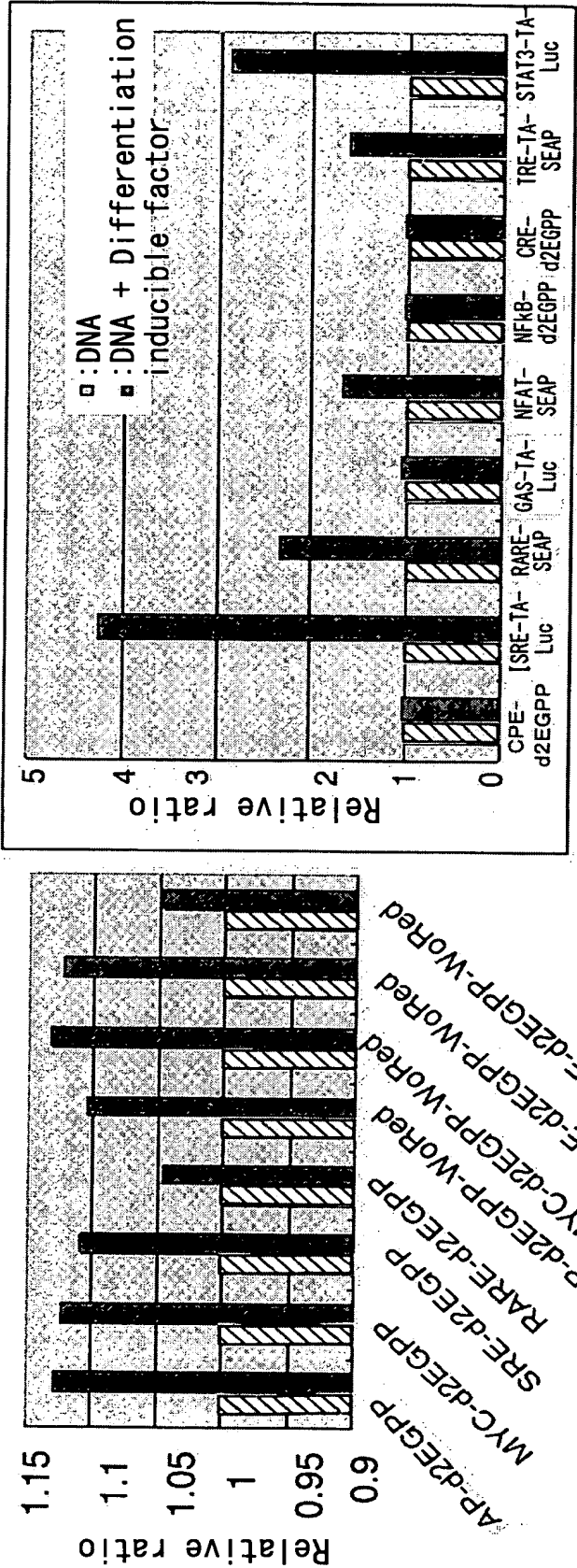


FIG.26 Measurements in a time-series manner of transcriptional activity in the bone differentiation process

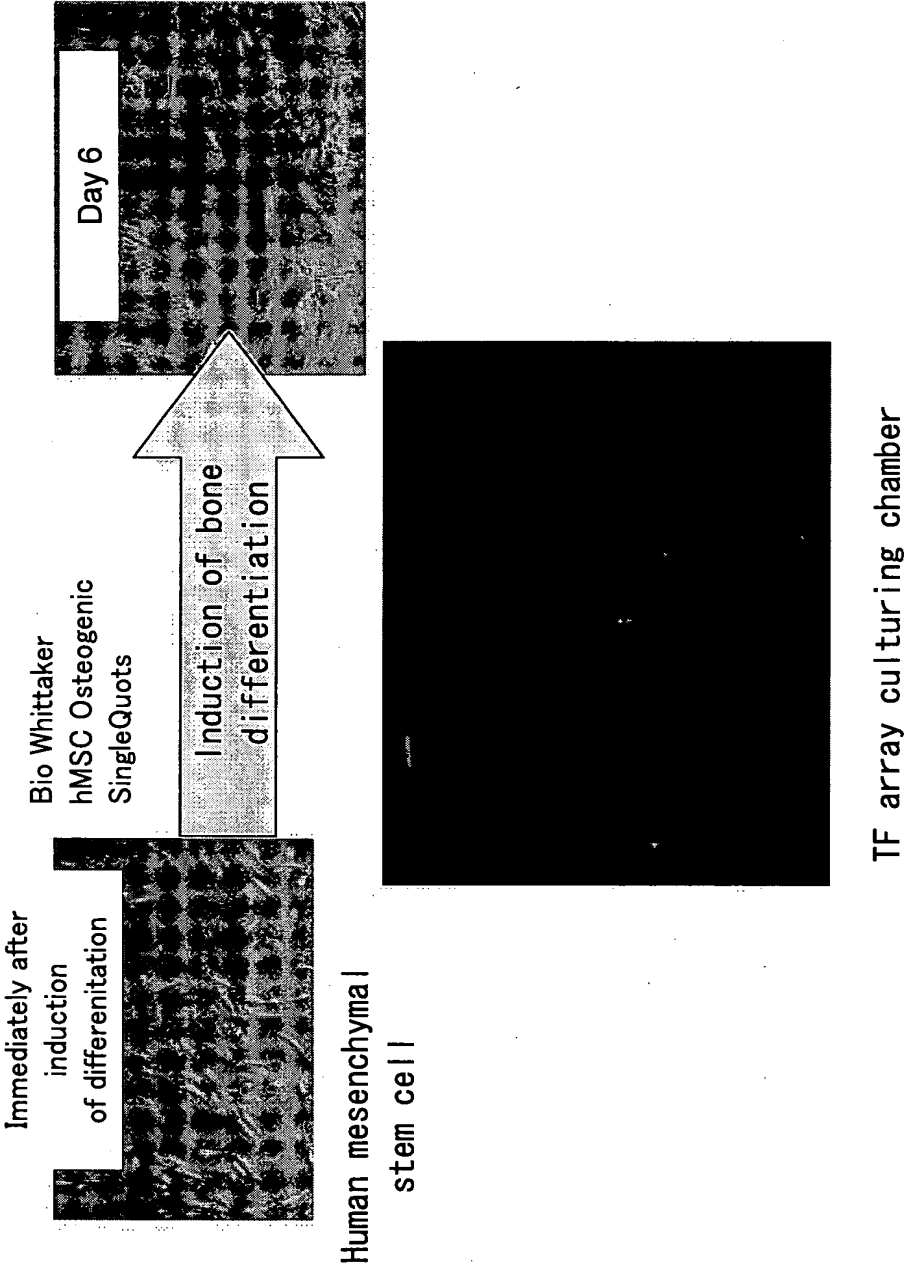


FIG.27

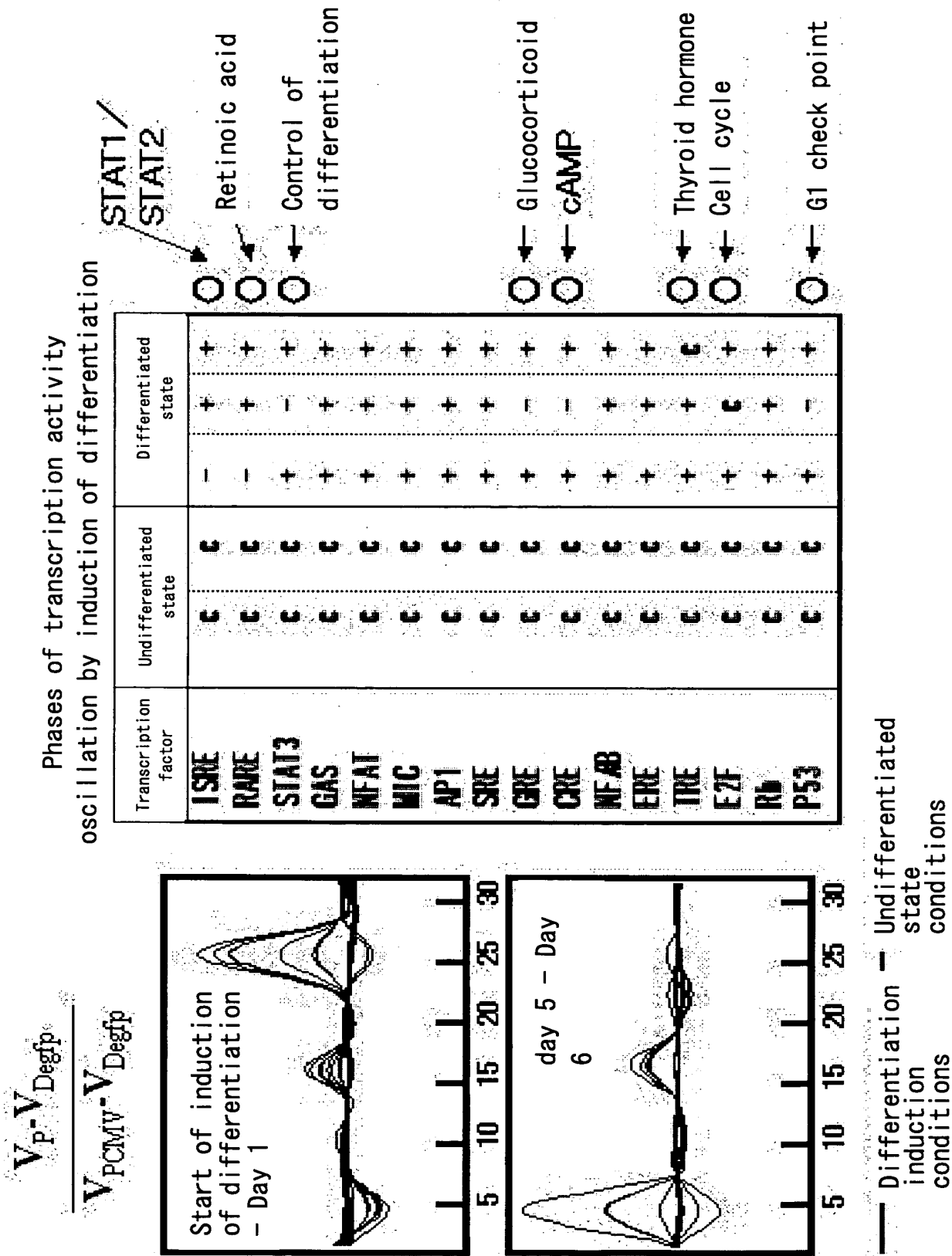


FIG.28

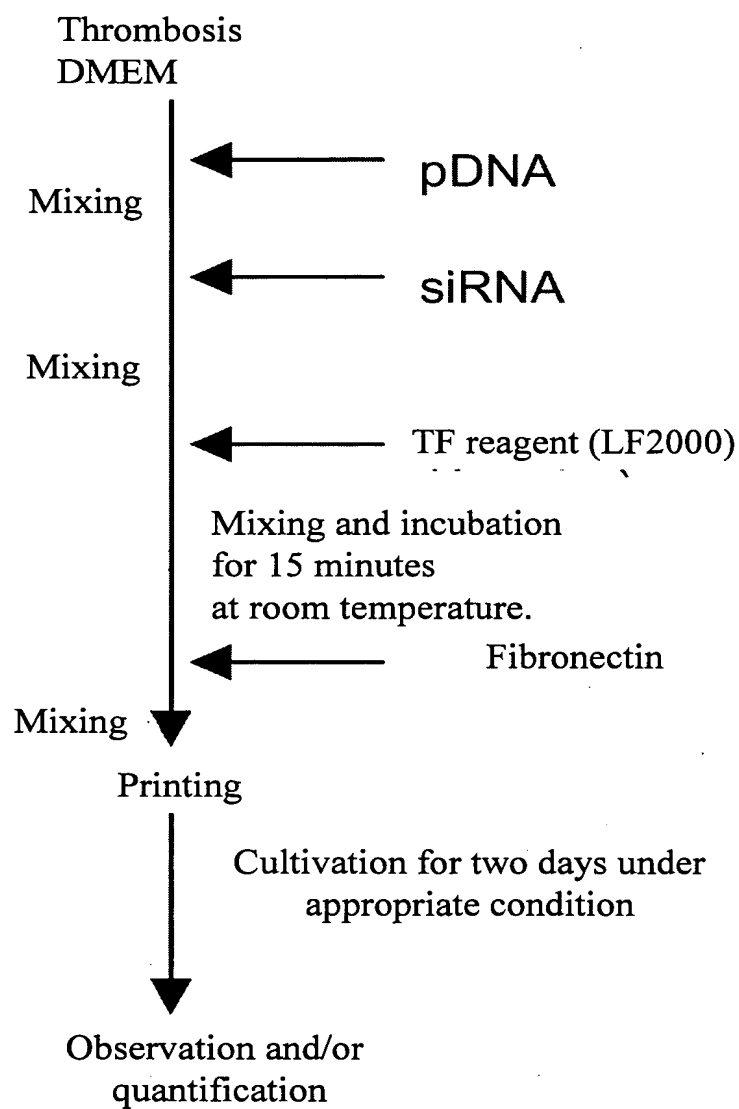


Fig. 29A

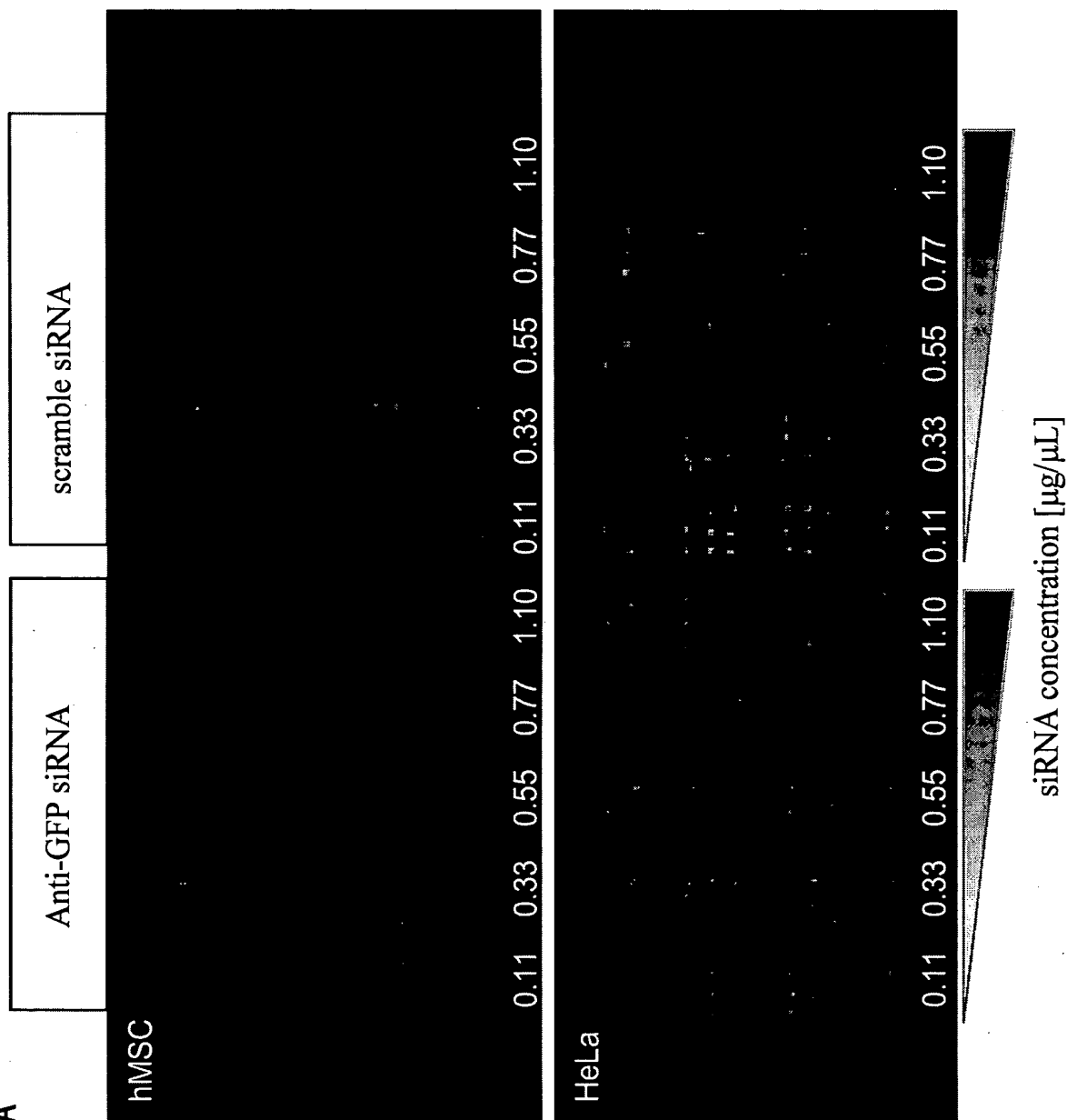


Fig. 29B

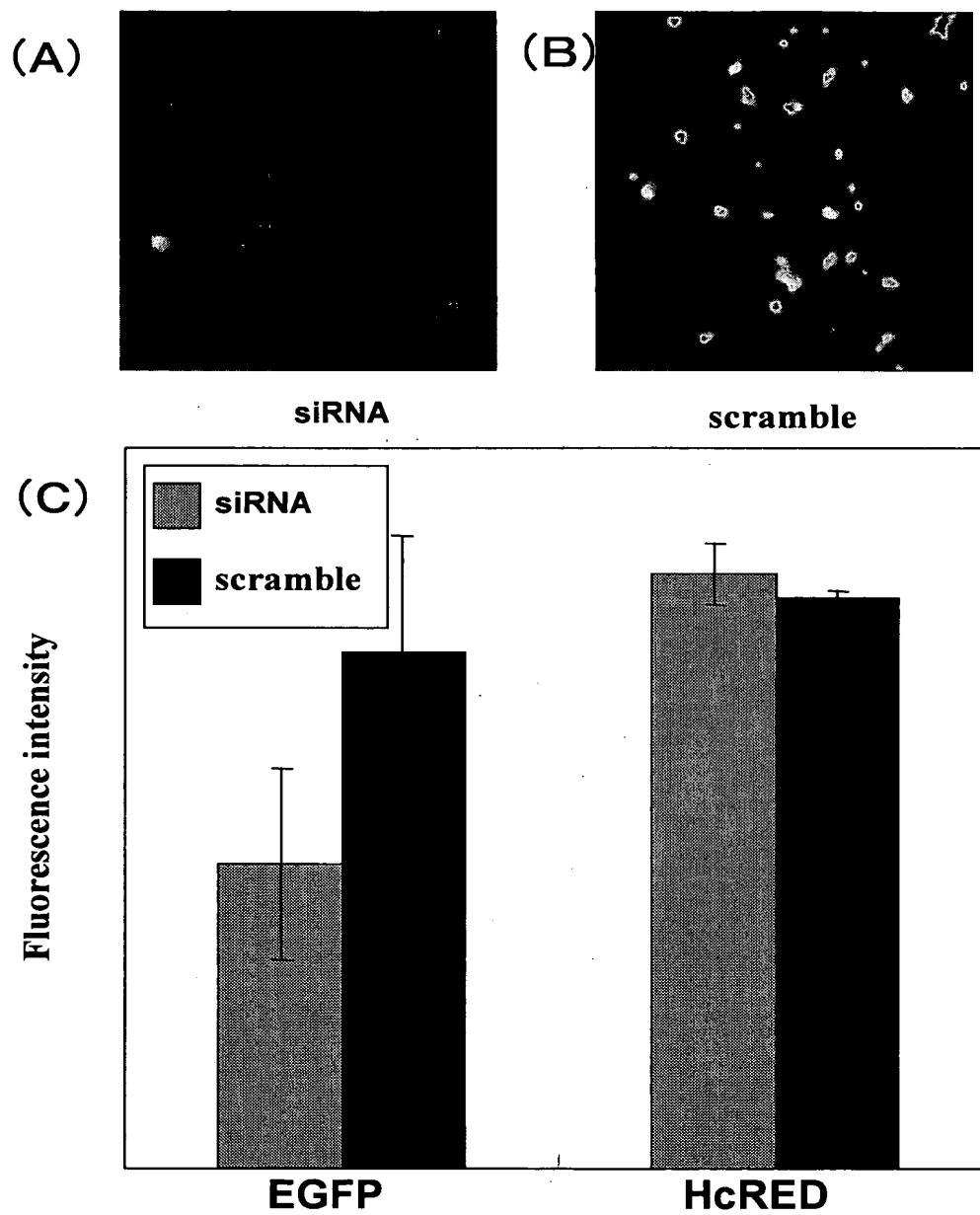


Fig. 29C

Cell-based RNAi assay by Transfection MicroArray™

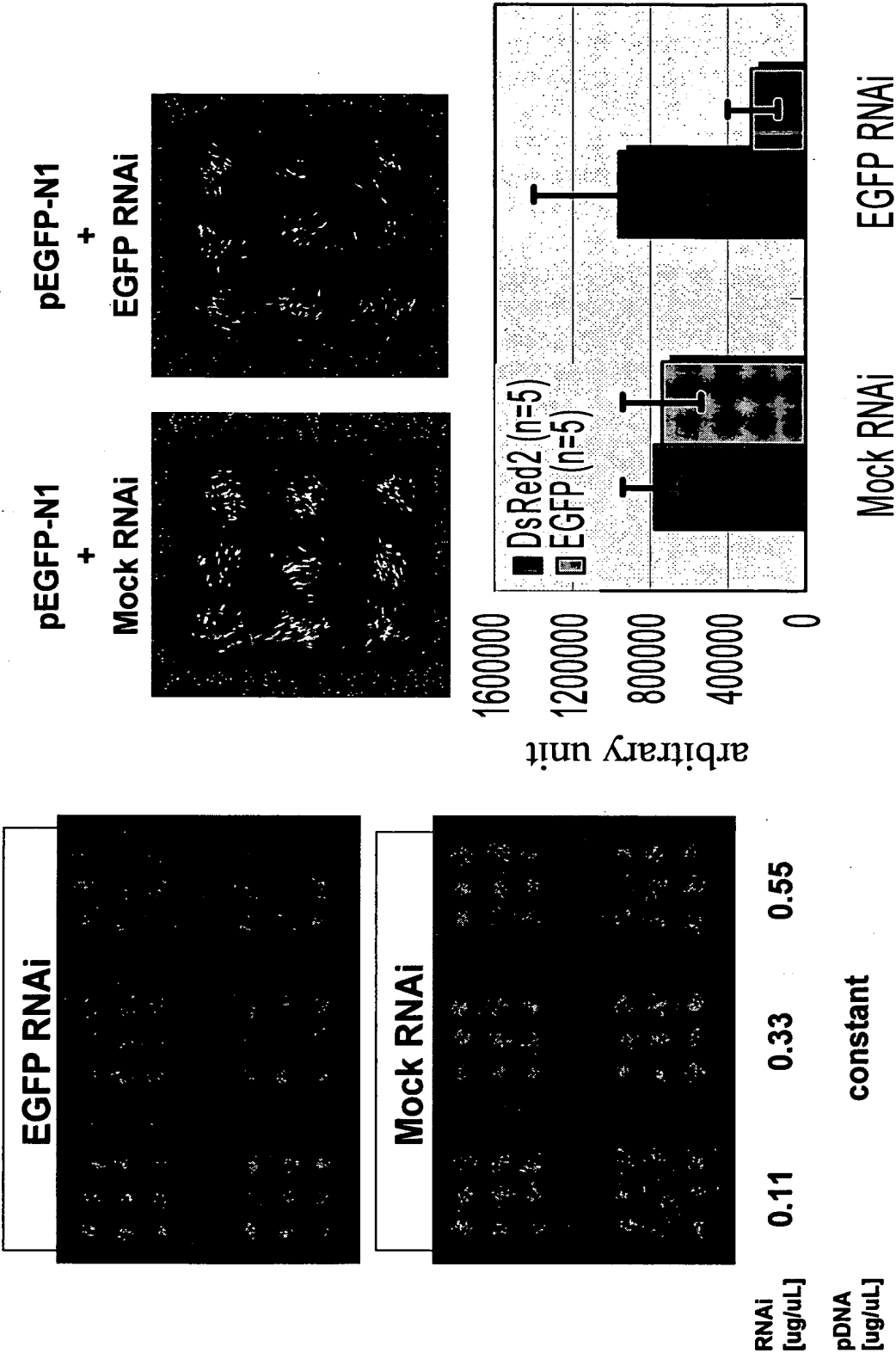
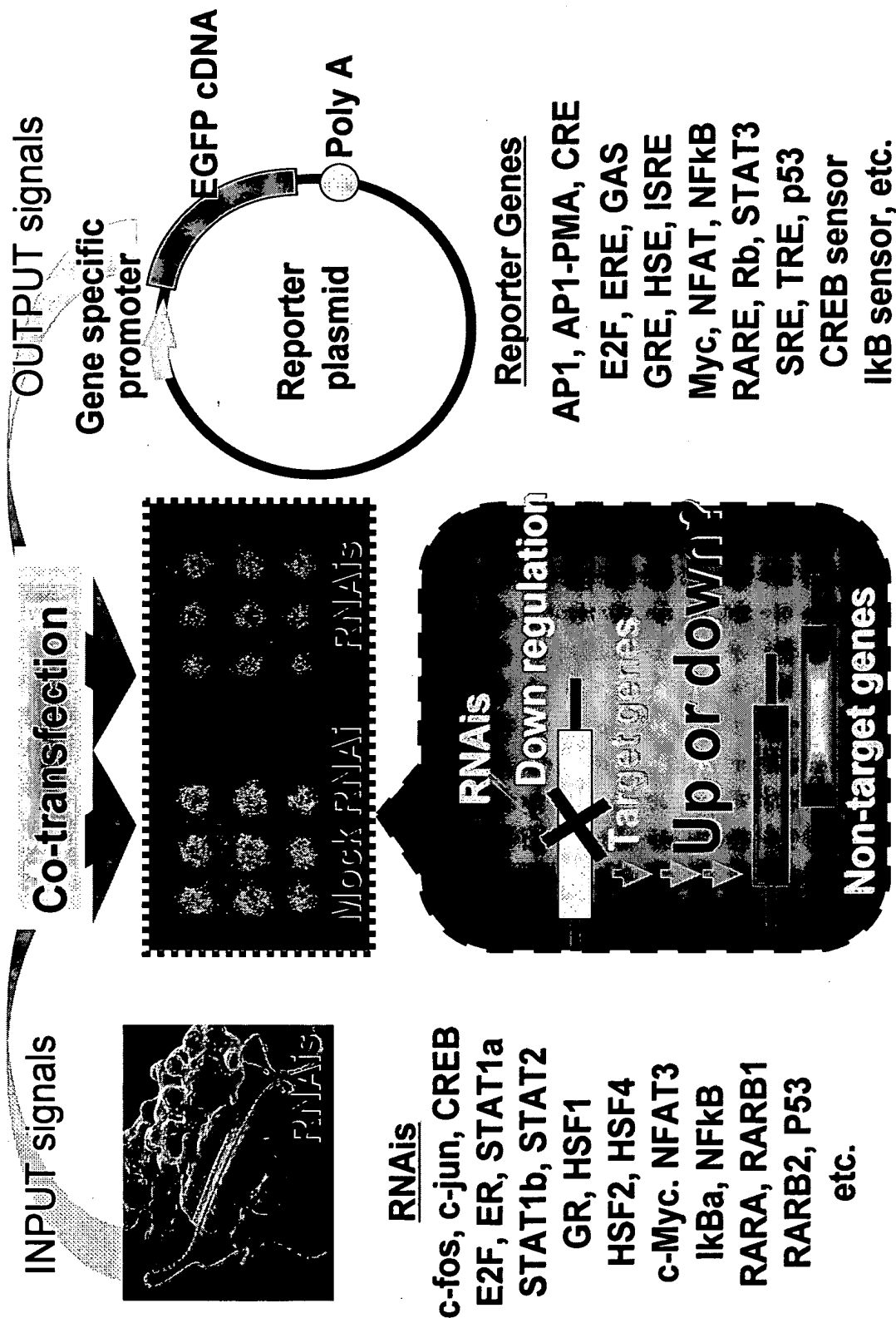
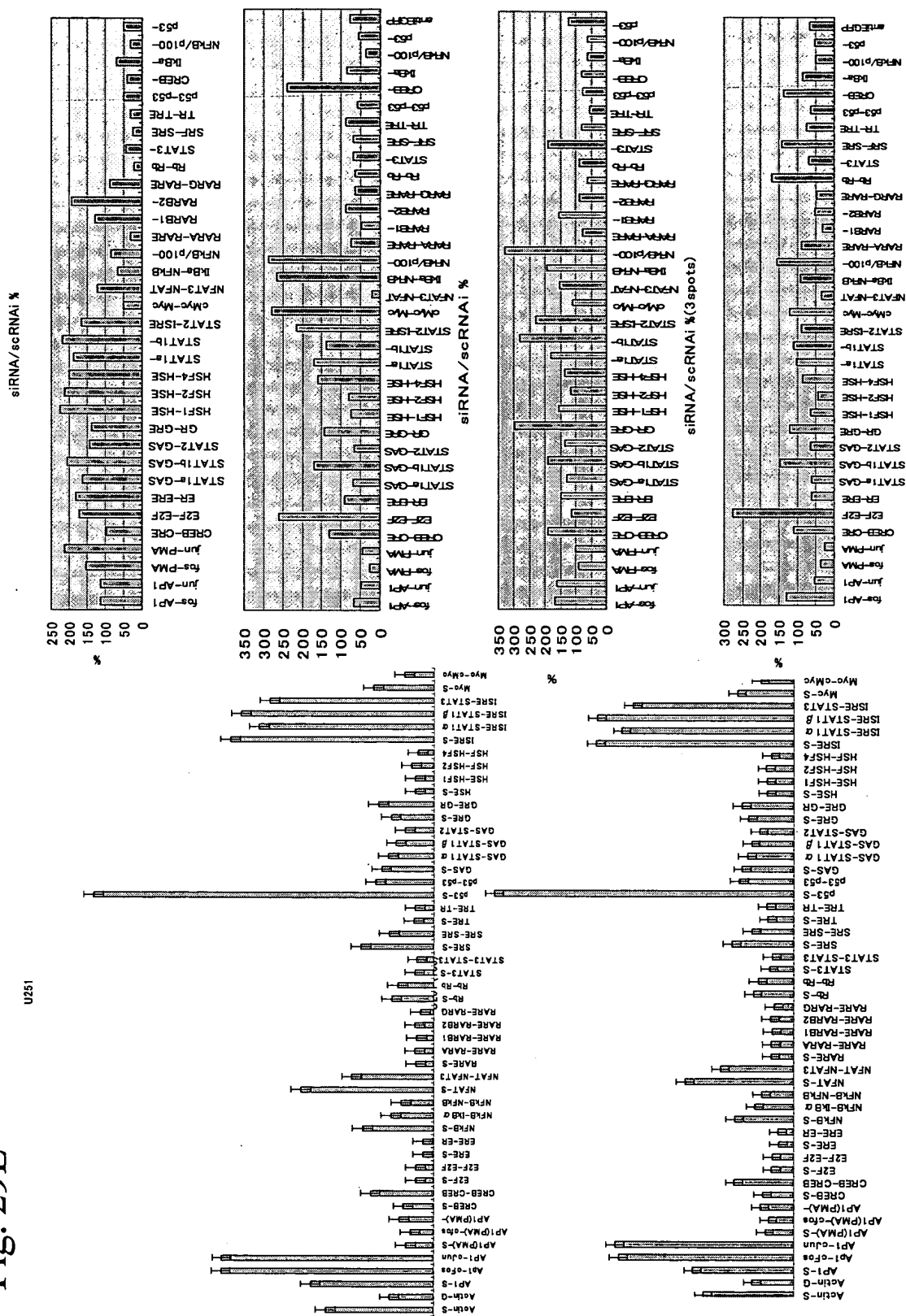


Fig. 29D

Principle of RNAi-Reporter combination chip







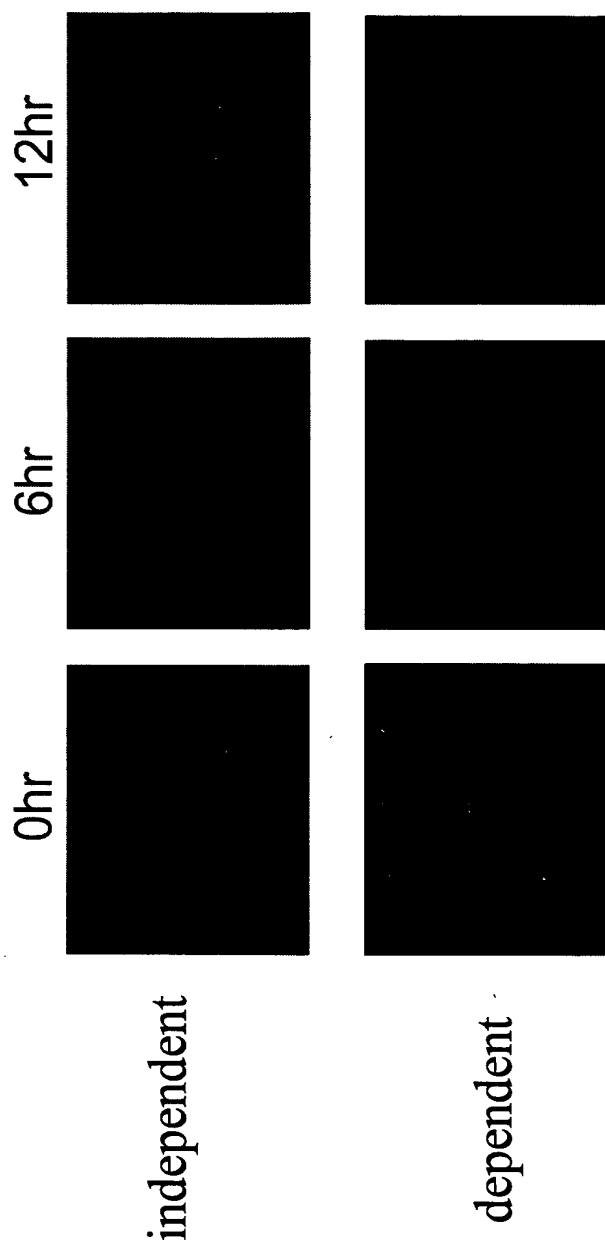
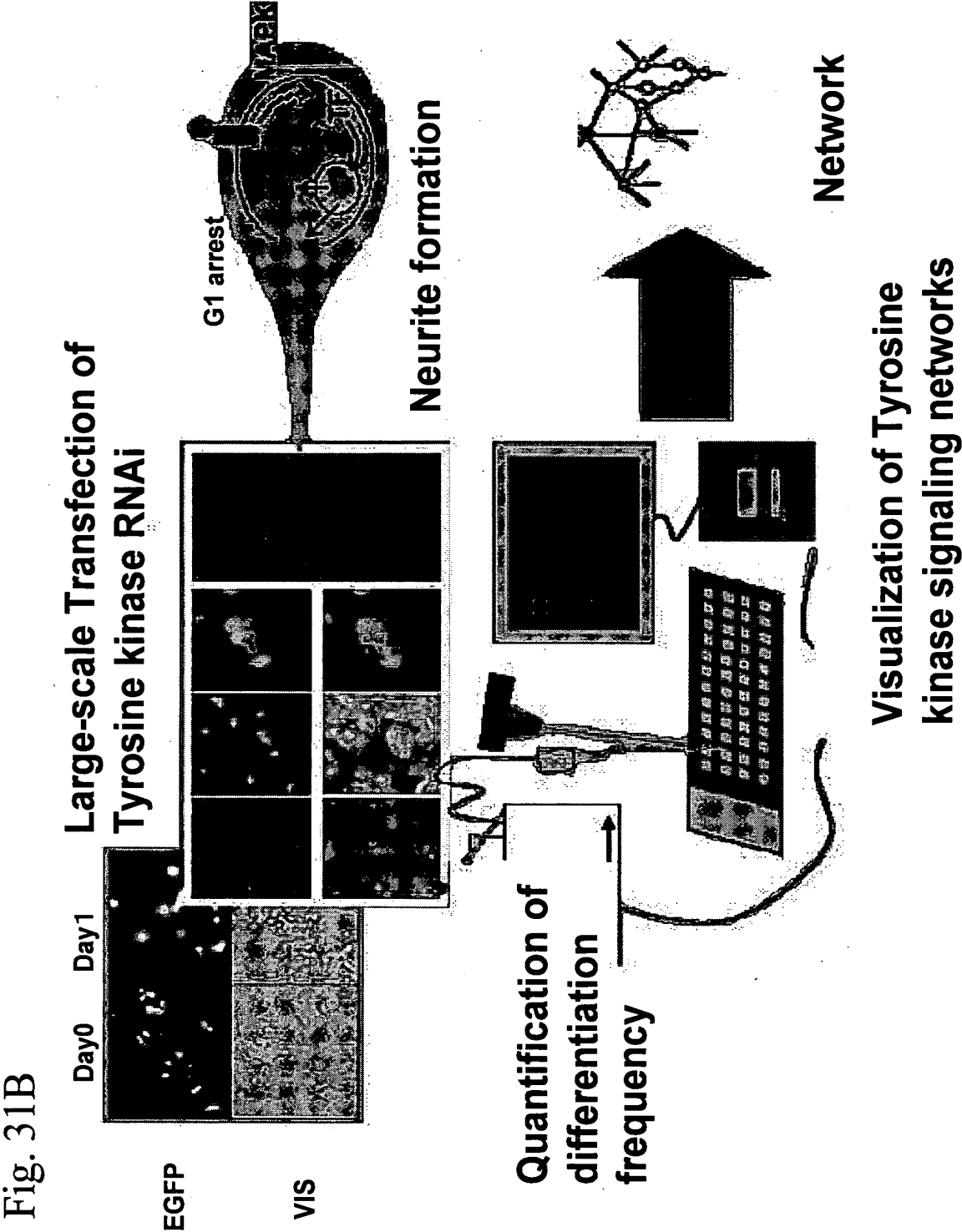


Fig. 31



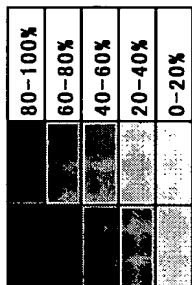


Fig. 31C

TK	RA	NGF	TK	RA	NGF	TK	RA	NGF	TK	RA	NGF
ABL1		EPHB2				ITK			PTK6		
ABL2		EPHB3				JAK1			PTK7		
ACK1		EPHB4				JAK2			PTK9		
ALK		EPHB6				JAK3			PTK9L		
AXL		ERBB2				KDR			RET		
BLX		ERBB3				KIAA1079			ROR1		
BMX		ERBB4				KIT			ROR2		
BTk		FER				LCK			ROS1		
C20orf64		FES				LTK			RYK		
CSF1R		FGFR1				LYN			SRC		
CSK		FGFR2				MATK			SYK		
DDR1		FGFR3				MERTK			TEG		
DDR2		FGFR4				MET			TEK		
DKFZp761 P1010		FGR				MST1R			TIE		
EGFR		FLT1				MUSK			TNK1		
EPHA1		FLT3				NTRK1			TXK		
EPHA2		FLT4				NTRK2			TYK2		
EPHA3		FRK				NTRK3			TYRO3		
EPHA4		FYN				PDGFRA			YES1		
EPHA7		HCK				PDGFRB			scramble		
EPHA8		IGF1R				PTK2			MafK		
EPHB1		INSR				PTK2B			miR-23		

(*B-bridge siRNAs against Tyrosine kinases)

Fig. 31D

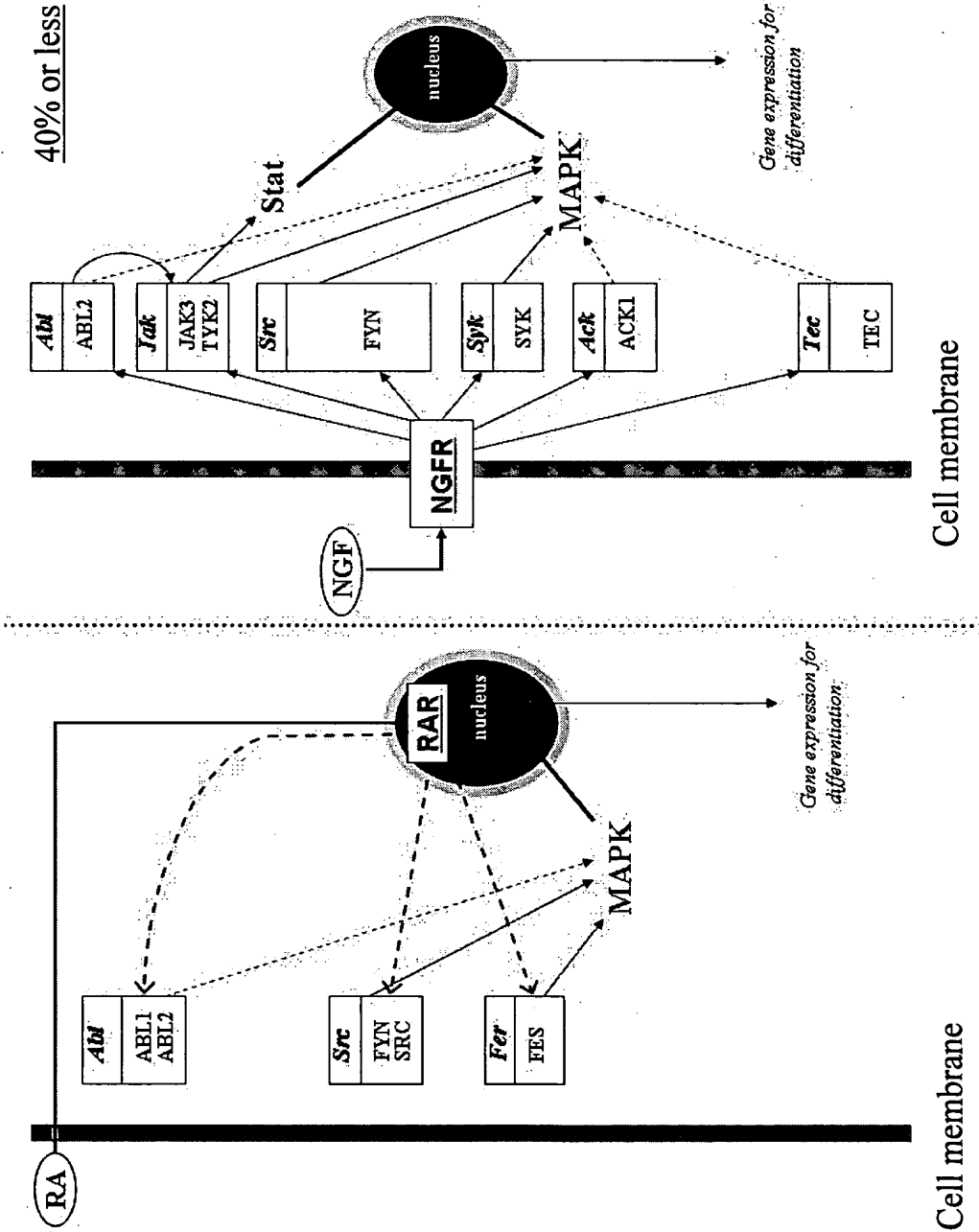
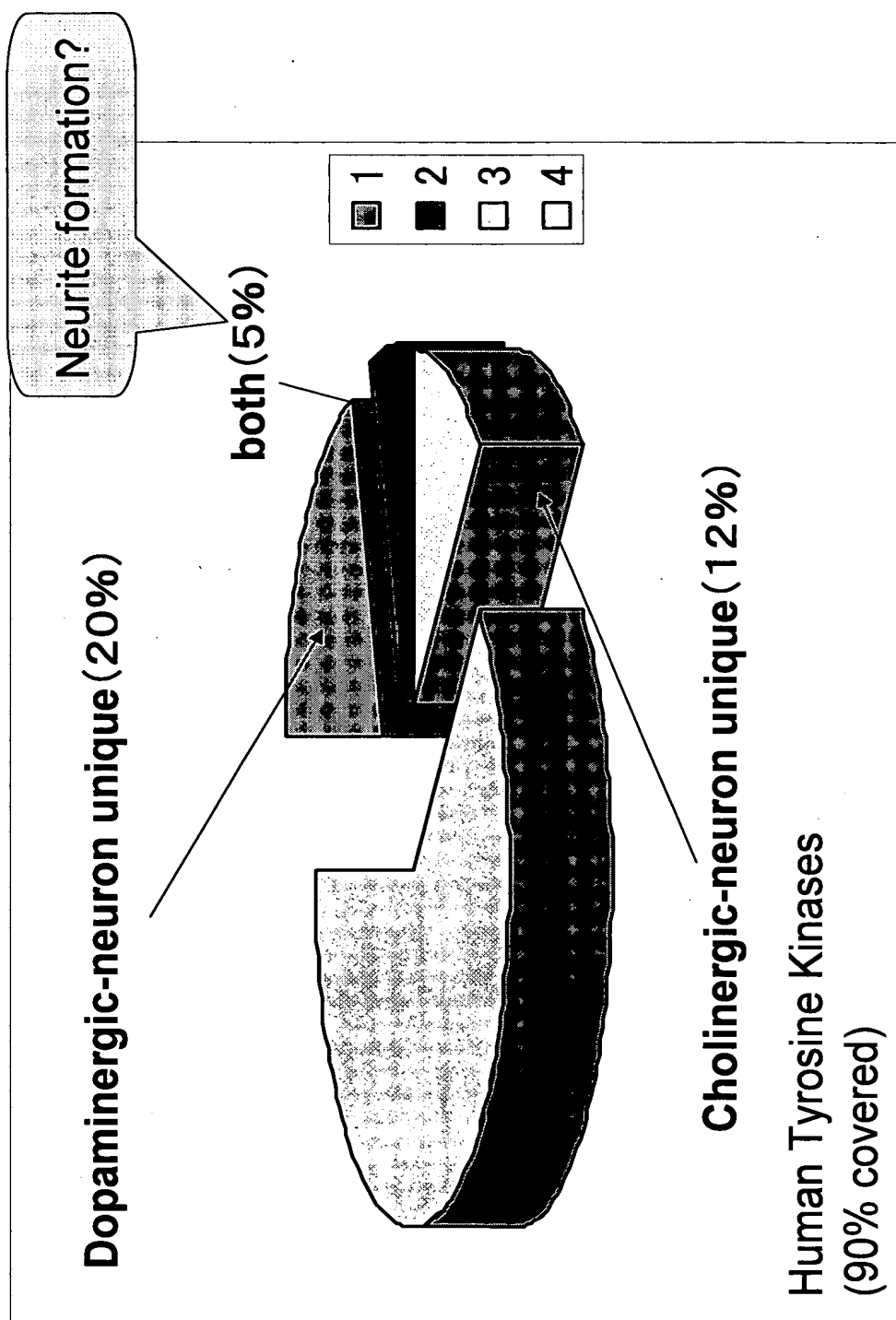


Fig. 31E



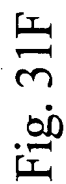


Fig. 32

System configuration for producing data of cell profile data

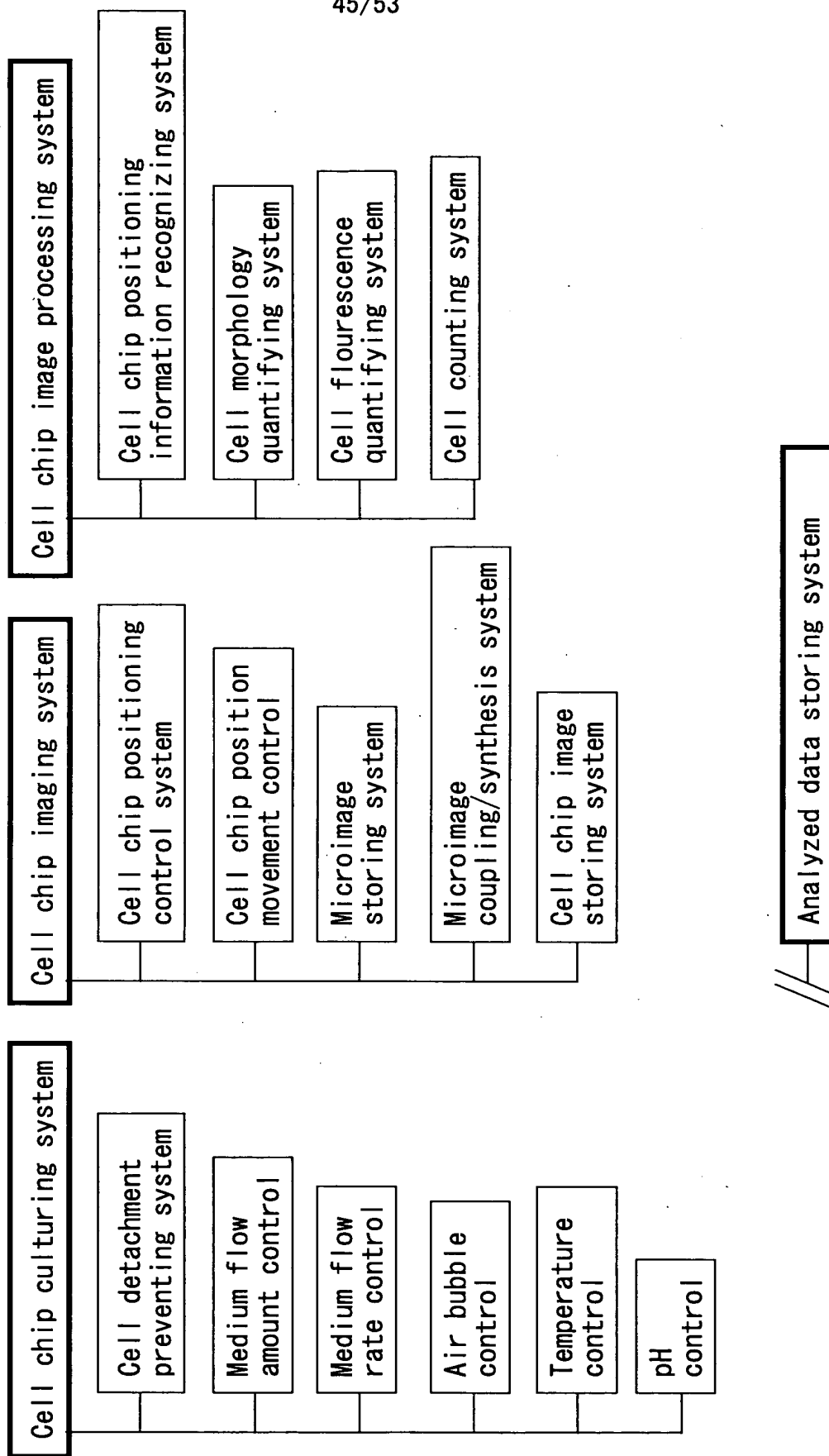


Fig. 33A

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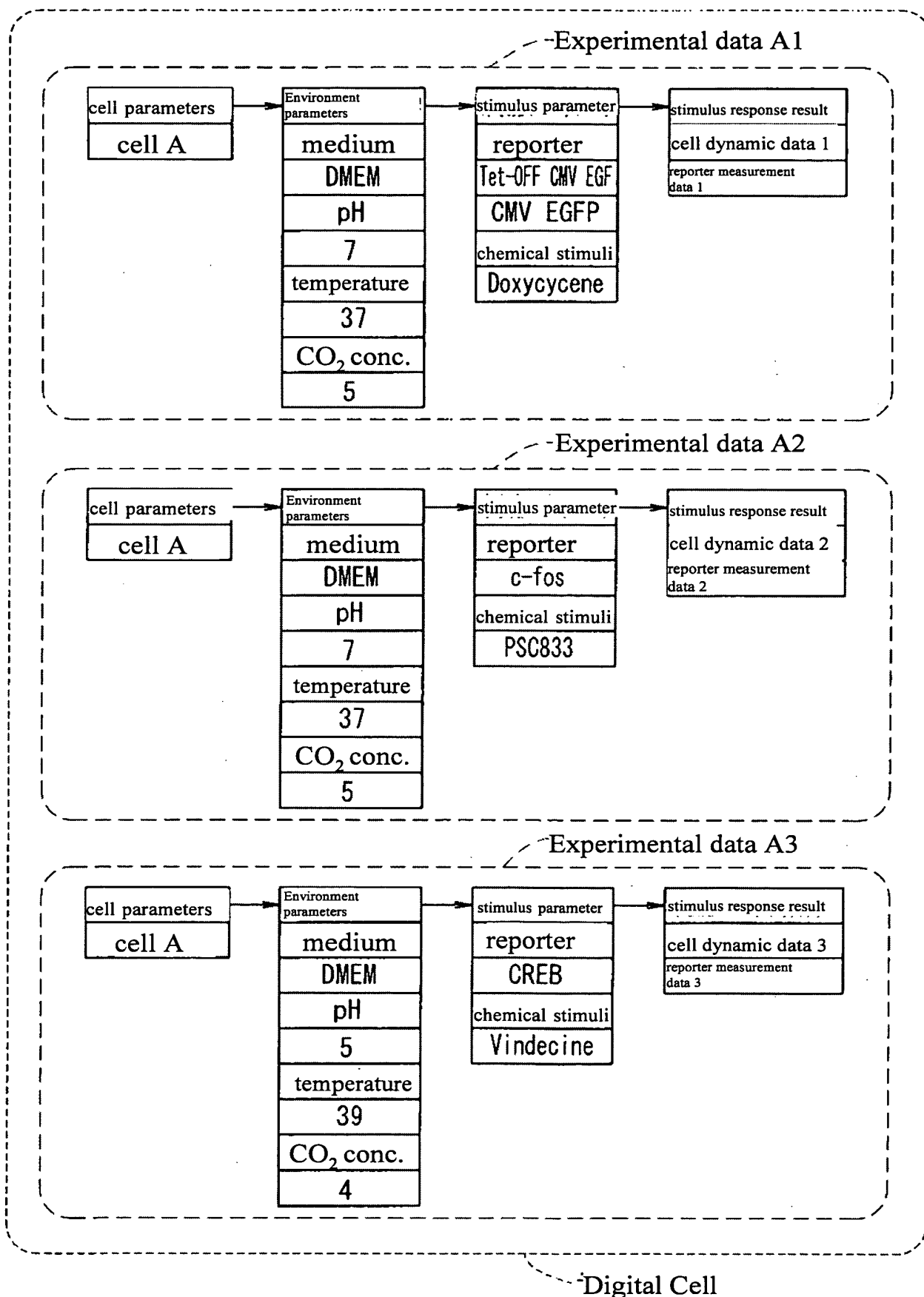


Fig. 33B

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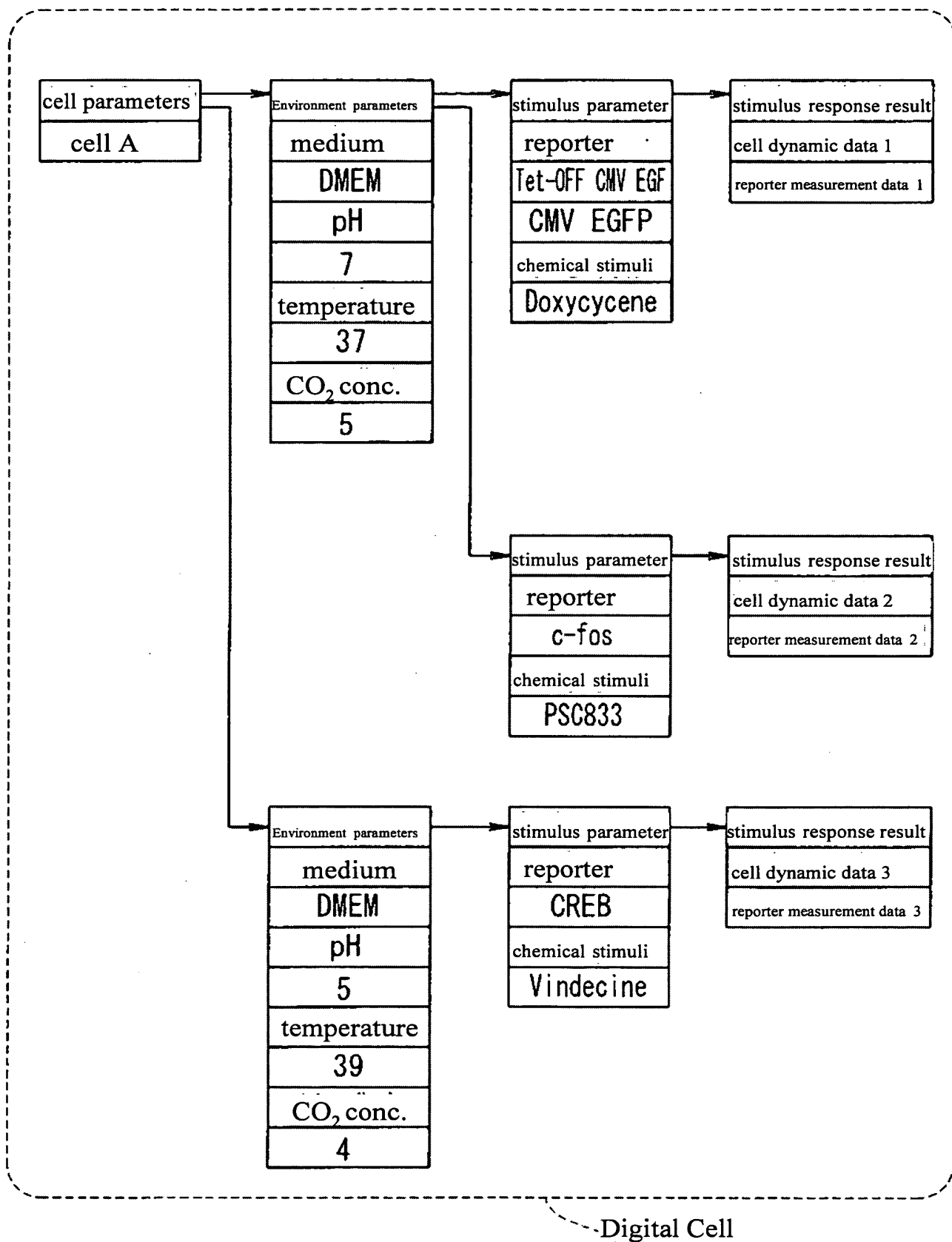


Fig. 34

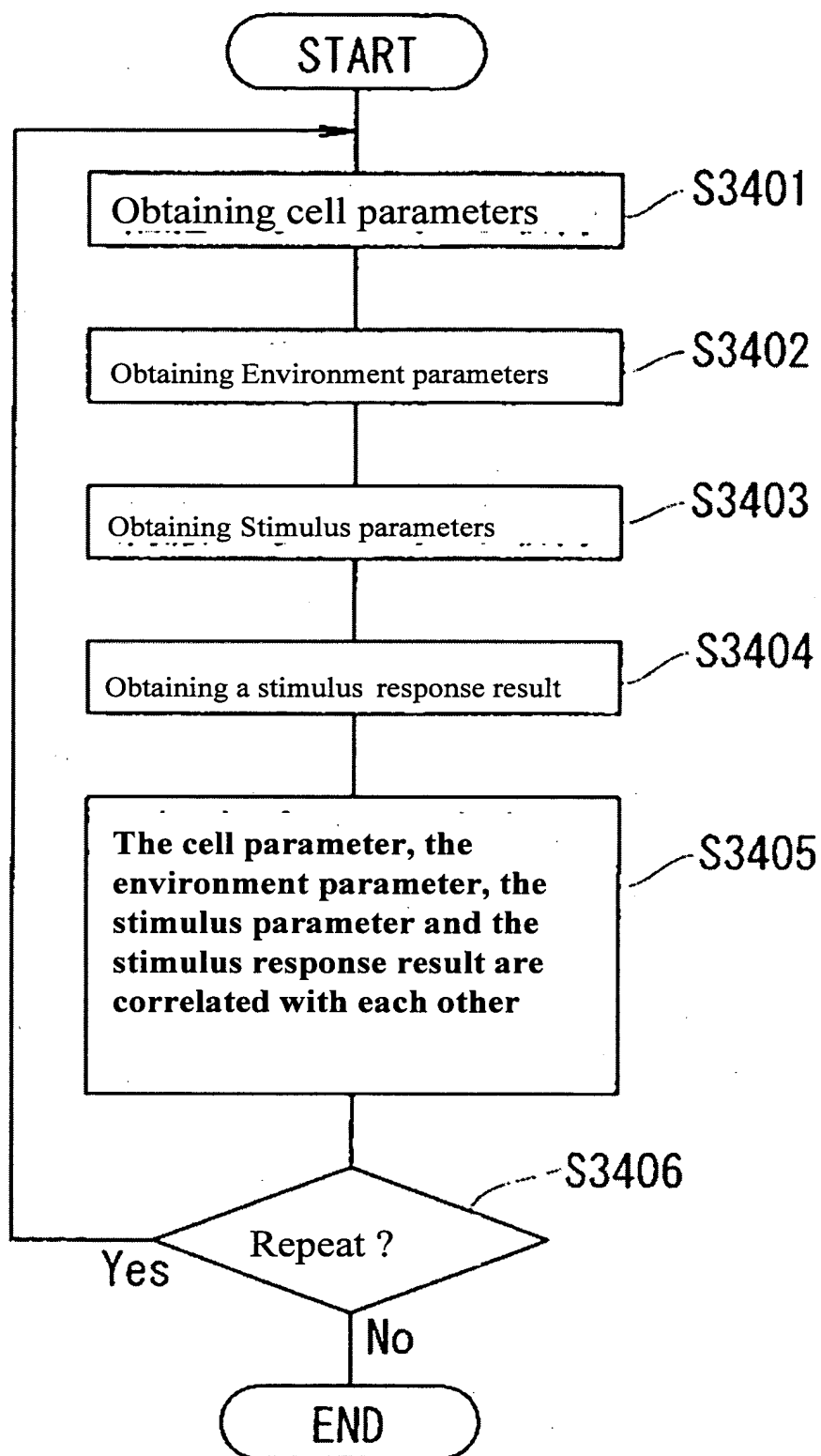


Fig. 35

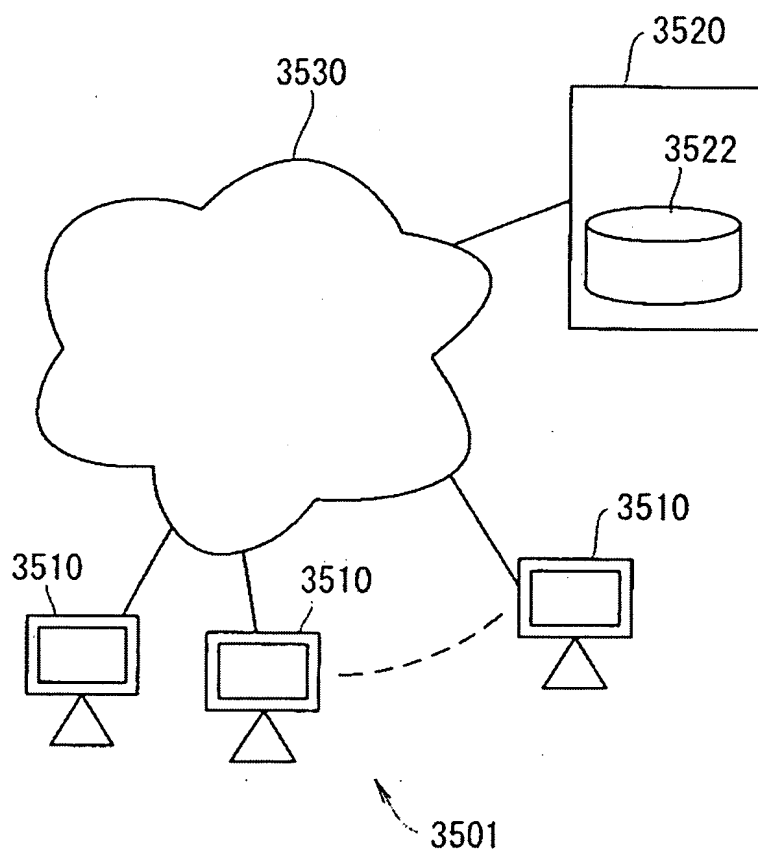


Fig. 36

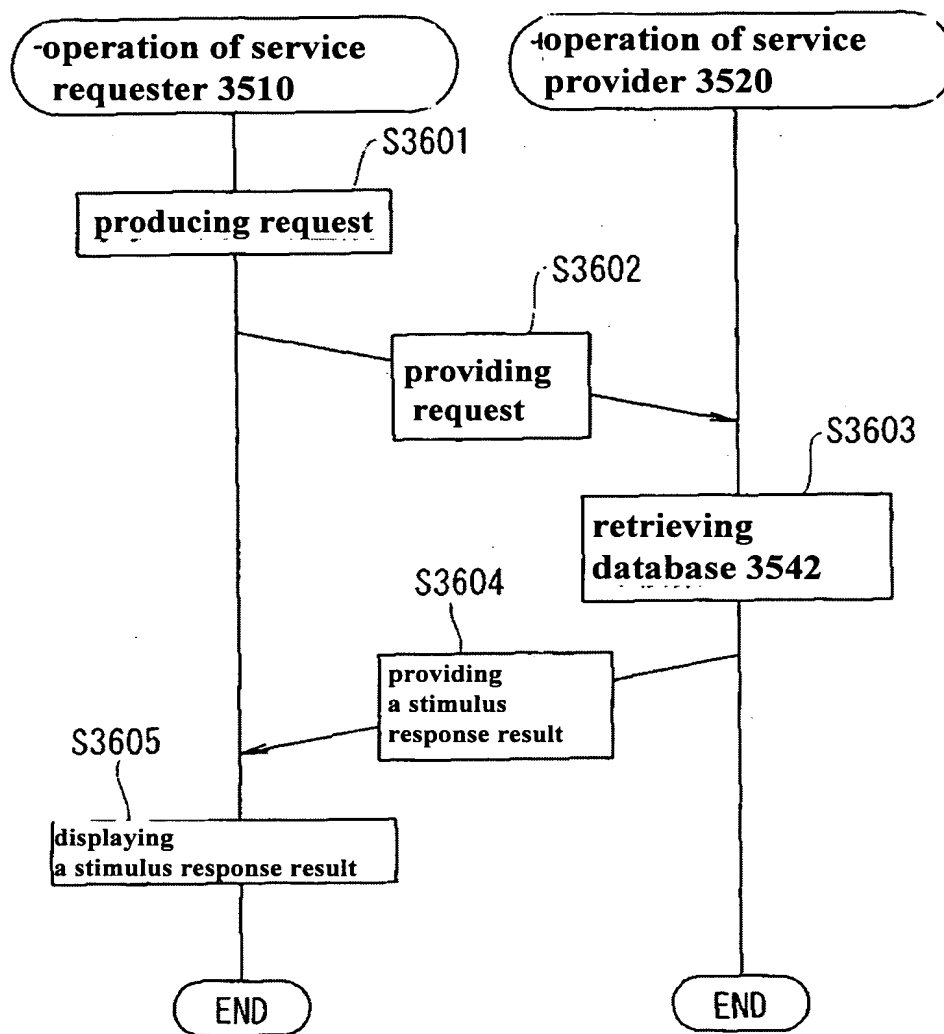
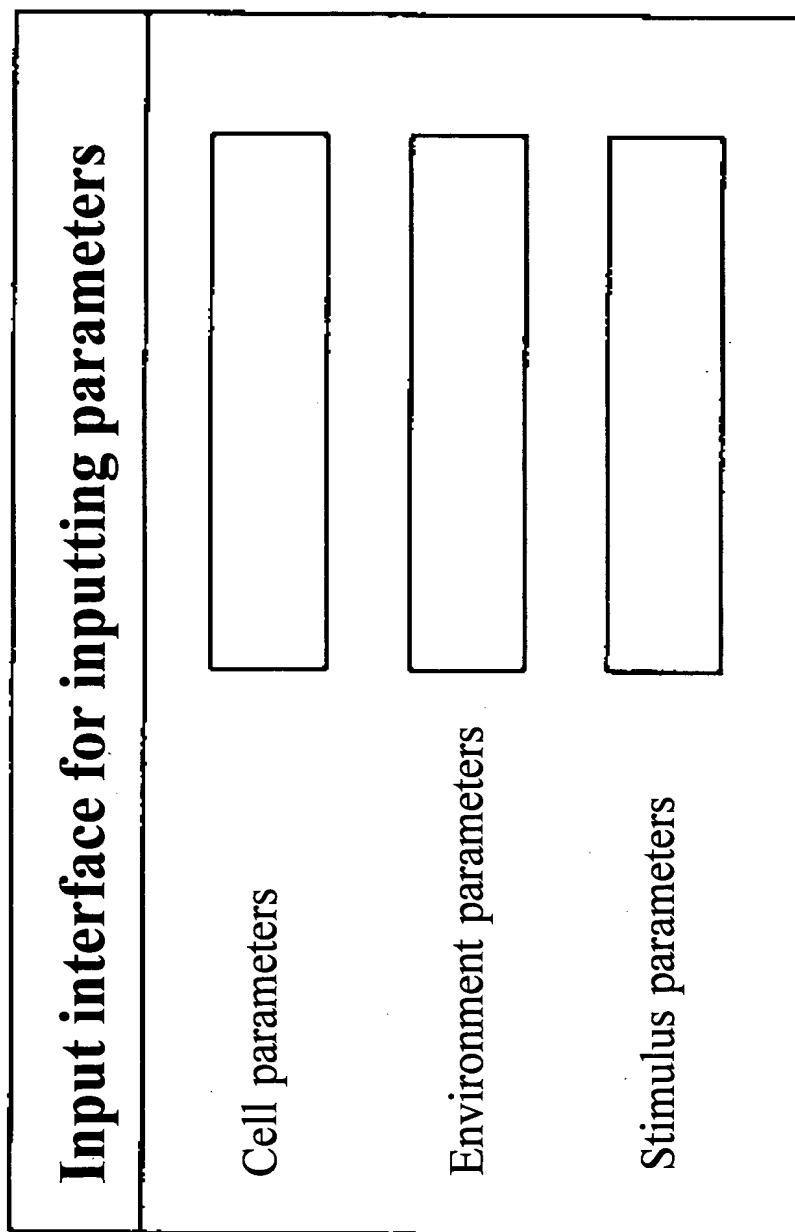
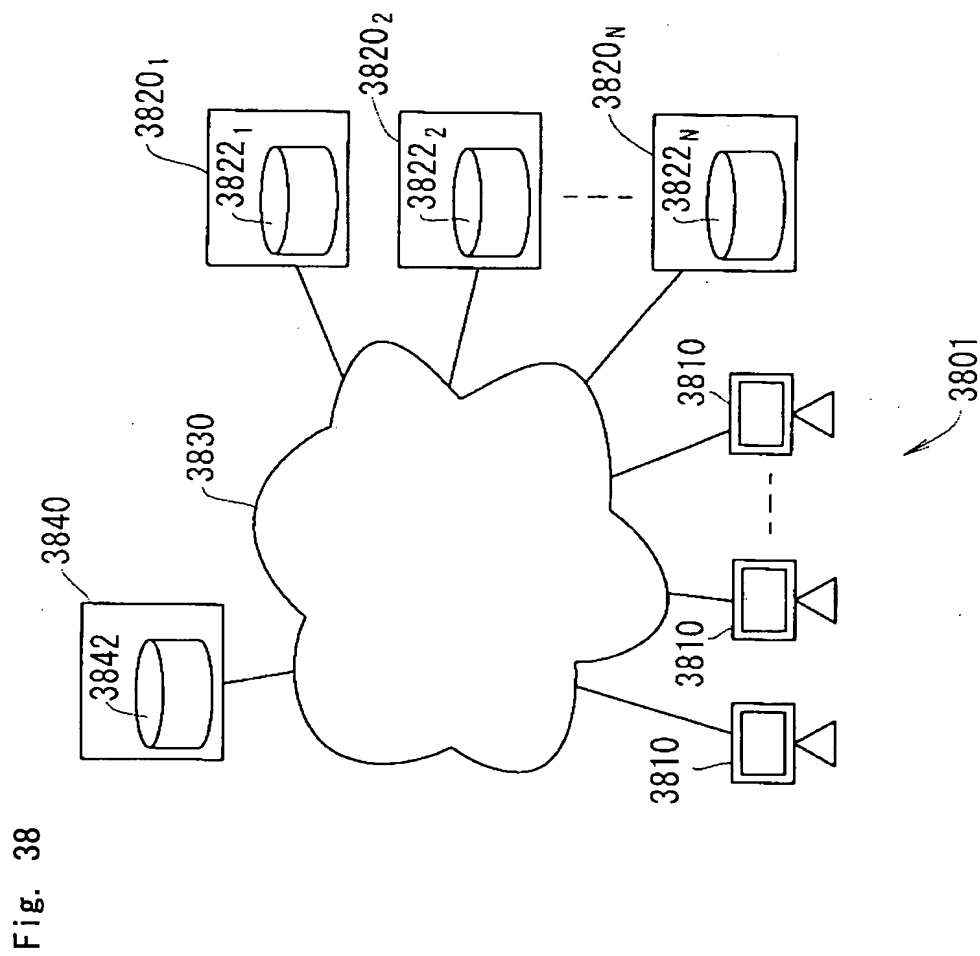


Fig. 37





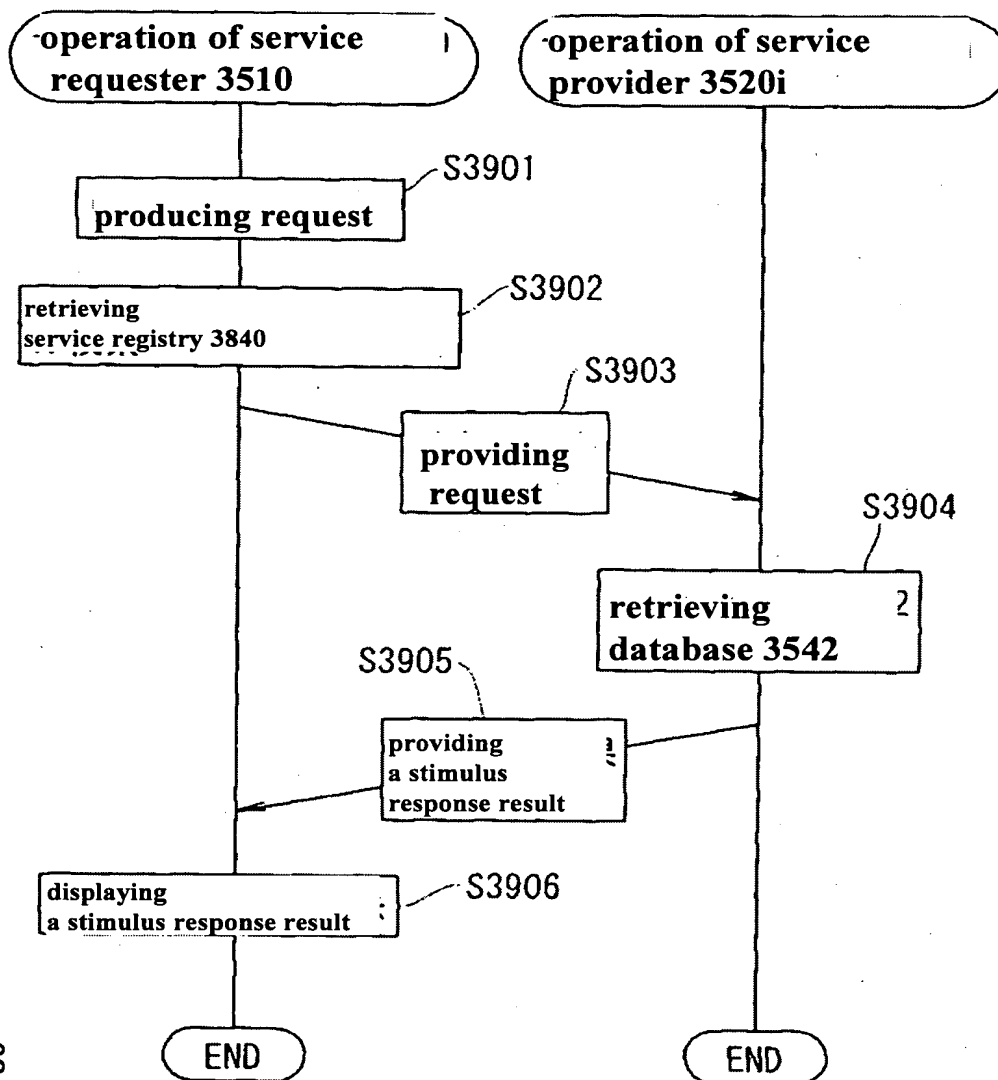


Fig. 39

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